U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-257 605

PROGRESS IN THE PREVENTION AND CONTROL OF AIR POLLUTION IN 1973, REPORT TO CONGRESS

ENVIRONMENTAL PROTECTION AGENCY

JANUARY 1974

268034

PB 257 605

PROGRESS in the PREVENTION & CONTROL of AIR POLLUTION in 1973

Report to Congress

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • 4TH & M STREET SOUTH WEST
WASHINGTON, D.C. 20460

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

BIBLIOGRAPHIC DATA SHEET	1. Report No.	2.	3. Recipient's Accession No. PB-257 605
4. Title and Subtitle Progress in the Prevention and Control of Air Pollution in 1973, Report to Congress			5. Report Date Jan 74 6.
7. Author(s)			8. Performing Organization Rept. No.
9. Performing Organization Name and Address Environmental Protection Agency Washington, D.C.			10. Project/Task/Work Unit No. 11. Contract/Grant No.
12. Sponsoring Organization Name and Address			13. Type of Report & Period Covered 14.

15. Supplementary Notes

See also PB-257 606.

16. Abstracts

This report covers the period January 1 to October 15, 1973 and describes the major elements of progress toward the prevention and control of air pollution that have been made by EPA since the last report.

17. Key Words and Document Analysis. 17a. Descriptors

*Air pollution abatement,
*Organizations,
*Performance evaluation,

Projects,
Regulations,
Standards,
Hydrocarbons,
Carbon monoxide,
Nitrogen oxides,
Revisions,
State government,
Sulfur oxides,
Sources,
Hazardous materials,
Pollutants,
Law enforcement,
Exhaust emissions,
Combustion products,
National government,
Monitoring,
Technology,
Public health,
Personnel.

17b. Identifiers/Open-Ended Terms

Environmental Protection Agency,
National ambient air quality standards,
Clean Air Act,
Progress reports,
Air quality control regions,
Stationary sources,
Total suspended particulates.

17c. COSATI Field/Group 13 B

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
National Technical Information Service Springfield, Virginia 22161	UNCLASSIFIED	105p
	20. Security Class (This Page) UNCLASSIFIED	22. Price 5.50/2.25

FORM NTIS-35 (REV. 10-73) ENDORSED BY ANSI AND UNESCO. THIS FORM MAY BE REPRODUCED USCOMM-DC 8265-P74

PROGRESS IN THE PREVENTION AND CONTROL OF AIR POLLUTION IN 1973

ANNUAL REPORT
OF THE
ADMINISTRATOR OF THE ENVIRONMENTAL
PROTECTION AGENCY

TO

THE CONGRESS OF THE UNITED STATES

IN COMPLIANCE WITH
THE CLEAN AIR ACT AS AMENDED

JANUARY 1974

TABLE OF CONTENTS

CHAPTER		PAGE
PREFACE		v
I -	Introduction and Summary.	1
II -	The Progress and Problems Associated with Control of Mobile Source Emissions and the Research Efforts Related Thereto	6
-	Measures Taken to Implement Mandated Title II Emission Standards.	6
-	Transportation Control Plans.	11
-	Additional Activities in the Mobile Source Area	14
-	Mobile Source Research and Development.	21
III -	The Development of Air Quality Criteria and Recommended Emission Control Requirements.	24
-	National Ambient Air Quality Standards.	24
-	National Emission Standards for Hazardous Air Pollutants.	25
-	Health Effects Research	29
IV -	The Status of Enforcement Actions Taken Pursuant to This Act	30
-	Stationary Source Enforcement Actions	30
-	Mobile Source Enforcement Actions	33
-	Enforcement of Section 306 - Federal Procurement.	38
V -	The Status of State Standards Setting, Including Such Plans for Implementation as Have Been Developed	40
-	Issues Affecting Development and Implementation of State Implementation Plans	42
-	Status of State Implementation Plan Approvals, Disapprovals, and Promulgations	49

Table of Contents (continued)

CHAPTER		PAGE
VI	The Extent of Development and Expansion of Air Pollution Monitoring Systems	51
	- Progress in the Development of Monitoring Systems	52
	- Trends in National Ambient Air Quality Levels	57
VII	The Development of New and Improved Air Pollution Control Techniques	66
VIII	The Development of Instrumentation to Monitor Emissions and Air Quality	72
	- Emissions Monitoring Developments	73
	- Ambient Monitoring Developments	74
	- Quality Control Efforts	75
IX	Standards Set or Under Consideration Pursuant to Title II of This Act	76
X	The Status of State, Interstate, and Local Pollution Control Programs Established Pursuant to and Assisted by This Act	79
	- Federal Financial Assistance to Air Pollution Control Agencies	80
	- Progress of State and Local Air Pollution Control Programs	80
XI	Reports and Recommendations Made by the President's Air Quality Advisory Board	85
APPENDIX	Summary of EPA's Stationary Source Air Enforcement Actions	

Tables

		Page
Table 1	- Major Air Pollution Control Regulations and Standards Issued During 1973.	2
Table 2	- 1975 Model Year Light-Duty Vehicle Emission Standards	7
Table 3	- Status of the Transportation Control Plans. .	13
Table 4	- Control Measures Used in Transportation Control Plans	15
Table 5	- Emission Levels of In-Use Vehicles.	17
Table 6	- Sources Regulated by National Emission Standards for Hazardous Air Pollutants . .	26
Table 7	- New Source Performance Standards Proposed in 1973	28
Table 8	- Summary of Mobile Source Enforcement Actions.	34
Table 9	- Priority Classifications of Air Quality Control Regions	41
Table 10	- Status of State Implementation Plans.	50
Table 11	- Status of Air Quality Control Regions with Respect to State Implementation Plan Monitoring Requirements (Sept. 1973). . . .	53
Table 12	- Comparison of Numbers of Existing and Proposed Monitors with Number Required by State Implementation Plans	53
Table 13	- Status of Air Quality, Total Suspended Particulates.	62
Table 14	- Status of Air Quality, Sulfur Dioxide 1972. .	63
Table 15	- Status of Air Quality, Oxidants 1972.	64

Tables (continued)

		Page
Table 16	- Status of Air Quality, Carbon Monoxide . .	65
Table 17	- Mobile Source Emission Standards Acted Upon by EPA in 1973.	77
Table 18	- Mobile Source Regulations Acted Upon by EPA in 1973.	76
Table 19	- Summary of Grant Awards to State and Local Air Pollution Control Agencies	81
Table 20	- Personnel Employed by State and Local Air Pollution Control Agencies	83

Table of Figures

Figure 1	- Illustrative Label for 1974 Vehicles-- Specific Information	19
Figure 2	- Composite Levels of Total Suspended Particulates at Urban and Non-urban NASN Stations.	58
Figure 3	- Composite Levels of Sulfur Dioxide at 32 NASN Stations	59

PREFACE

The Clean Air Act, as amended, authorizes a national program of air pollution research, regulation, and enforcement activities. This program is directed at the Federal level by the U. S. Environmental Protection Agency (EPA). However, primary responsibility for the prevention and control of air pollution at its source rests with State and local governments. EPA's role is to conduct research and development programs, set national goals (via standards and regulations), provide technical and financial assistance to the States, and, where necessary, supplement State implementation and enforcement programs.

Section 313 of the Clean Air Act requires the Administrator to report yearly on measures taken toward implementing the purpose and intent of the Act. Section 313 reads as follows:

> "Not later than six months after the effective date of this section and not later than January 10 of each calendar year beginning after such date, the Administrator shall report to the Congress on measures taken toward implementing the purpose and intent of this Act including, but not limited to, (1) the progress and problems associated with control of automotive exhaust emissions and the research efforts related thereto; (2) the development of air quality criteria and recommended emission control requirements; (3) the status of enforcement actions taken pursuant to this Act; (4) the status of State ambient air standards setting,

> including such plans for implementation and enforcement as have been developed; (5) the extent of development and expansion of air pollution monitoring systems; (6) progress and problems related to development of new and improved control techniques; (7) the development of quantitative and qualitative instrumentation to monitor emissions and air quality; (8) standards set or under consideration pursuant to title II of this Act; (9) the status of State, interstate, and local pollution control programs established pursuant to and assisted by this Act; and (10) the reports and recommendations made by the President's Air Quality Advisory Board."

This report covers the period January 1 to October 15, 1973 and describes the major elements of progress toward the prevention and control of air pollution that have been made by EPA since the last report.

I. INTRODUCTION AND SUMMARY

The year 1973 was significant for air pollution control. This report reviews the progress that the U. S. Environmental Protection Agency (EPA) has made during the first 10 months of 1973 in the control and prevention of air pollution. It follows the order of topics listed in Section 313 of the Clean Air Act. Additional measures of progress have been incorporated where appropriate.

EPA acted on a number of air pollution control regulations and standards in 1973. The major ones are summarized in Table 1.

A number of major events occurred in 1973:

- A 1-year suspension of the statutory 1975 hydrocarbon (HC) and carbon monoxide (CO) emission standards for light-duty motor vehicles was granted; interim standards were set.
- A 1-year suspension of the statutory 1976 nitrogen oxides (NO_x) emission standard for light-duty motor vehicles was granted; an interim standard was set.

Table 1

Major Air Pollution Control Regulations and Standards Issued During 1973[a]

Subject	Date Published in Federal Register	Status	Discussed in Chapter
Reduction of lead in gasolines	Jan. 10	Proposed	IX
Availability of lead-free gasolines	Jan. 10	Final	IX
Inspections of motor vehicle certification activities	Feb. 26	Proposed	IX
National emissions standards for hazardous air pollutants	March 30	Final	III
Stationary source upset provisions	May 2	Proposed	III
Servicing of auto emission controls	June 4	Final	IX
New source performance standards (Group II)	June 5	Proposed	III
Indirect sources/maintenance of standards	June 18	Final	V
Denial of grants, loans, and contracts to polluters	June 21	Proposed	IV
Emission standards for 1975 model year autos	July 2	Final	II
Significant deterioration of air quality	July 16	Proposed	V
Aircraft emissions	July 17	Final	IX
Aircraft engine retrofit	July 17	Proposed	IX
Emissions from light-duty trucks	Aug. 7	Final	IX
Emission standard for 1976 model year auto	Aug. 21	Final	II
Revocation of annual secondary ambient air quality standard for sulfur dioxides	Sept. 14	Final	III
Supplementary control systems	Sept. 14	Proposed	V
Regulations for high-altitude motor vehicles	Oct. 12	Proposed	IX
Transportation control plans	----- [b]	Final	II

[a] First 10 months only
[b] Promulgated on several different dates

- Transportation control plans were developed or approved for those Air Quality Control Regions requiring them.
- The Annual Secondary Sulfur Oxides Ambient Air Quality Standard was revoked.
- New Source Performance Standards were proposed for 7 additional sources.
- National Emissions Standards for Hazardous Pollutants were promulgated for asbestos, beryllium, and mercury.
- Approximately 65 enforcement actions were taken against stationary sources of air pollution and about 600 investigations are underway.
- Approximately 80 investigations were conducted by the Mobile Source Enforcement Program; 214 administrative orders and seven referrals to the Department of Justice have resulted.
- Effective July 1, 1974, air polluters will be ineligible for certain Federal contracts, grants, and loans.
- EPA promulgated compliance schedules, where necessary, for some stationary sources.
- In the center of selected cities, the average concentrations of total suspended particulates dropped 20 percent over the past 12 years, and

average sulfur dioxide concentrations dropped 50 percent.

- New monitoring data indicated that the air quality in some Air Quality Control Regions originally believed to be meeting standards may actually be violating the standards.
- The SO_x control technology development program is demonstrating adequate control technology for utility boilers to support the Agency's immediate (through 1980) regulatory and enforcement needs.
- Non-utility sources of SO_x, which are major contributors to ambient concentrations, are becoming the focal point of control system development activity.
- Control technology for fine particulates, potentially a major health hazard, is seriously deficient. A major effort to develop detection measurement and control technology is underway.
- The Community Health Effects Surveillance Studies (CHESS) program continued to demonstrate the benefits of improved air quality; adverse health effects of suspended sulfates were highlighted.
- Numerous monitoring instruments were developed--for example, instruments for 1) methane,

carbon monoxide, and carbon dioxide from cars and 2) ambient nitrogen oxides.

- The number of State and local control agency personnel climbed to 6,195 in Fiscal Year 1973, up from 4,165 in 1971 and 2,837 in 1969.
- EPA support of State and local control agencies increased to $50.5 million in Fiscal Year 1973, as compared to $42.1 million in 1972.

II. THE PROGRESS AND PROBLEMS ASSOCIATED WITH CONTROL OF MOBILE SOURCE EMISSIONS AND THE RESEARCH EFFORTS RELATED THERETO

Title II of the Clean Air Act mandated at least 90 percent reductions in carbon monoxide (CO), hydrocarbons (HC), and oxides of nitrogen (NO_x) emissions from light-duty vehicles and engines, and gave the Administrator authority to prescribe certain other emission standards for automobiles, trucks, and planes.

MEASURES TAKEN TO IMPLEMENT MANDATED TITLE II EMISSION STANDARDS

Suspension of HC and CO Emission Standards for 1975 Model Year Autos

In 1972, EPA denied the requests of five manufacturers for a 1-year suspension of the nationwide statutory 1975 automobile emission standards for HC and CO. As a result of a decision by the U. S. Court of Appeals for the District of Columbia Circuit, EPA in 1973 was required to reconsider its earlier decision. Following extensive public hearings, EPA on April 11, 1973, suspended the statutory 1975 HC and CO emission standards until 1976 and established a set of interim standards for 1975. A somewhat more restrictive set of interim standards was established for vehicles sold in California than for vehicles sold in the rest of the country. The California standards were designed to

require the use of catalyst systems on automobiles sold in that State. Suspension of the nation-wide standards avoids economic difficulties involved in forcing catalyst technology on all 1975 domestic vehicles, while the interim California standards provide for a gradual phasing-in of catalyst technology prior to 1976. Table 2 summarizes the 1975 interim emission standards.

Table 2

1975 Model Year Light-Duty Vehicle Emission Standards

	Emission Limit (Grams per Mile)		
	Hydro-carbons	Carbon-monoxide	Nitrogen Oxides
National Interim Standards	1.5	15.0	3.1
California Interim Standards	0.9	9.0	2.0
National Statutory Standards	.41	3.4	---

After the initial suspension decision granting the request of five domestic motor vehicle manufacturers, 27 other domestic and foreign automobile manufacturers also applied for a suspension. Having previously considered three of the Section 202(b)(5)(D) criteria which were applicable to the industry in general (i.e., public interest, availability of technology, and corroborating information, including the National Academy of Science's study on available technology) and concluding that they did favor suspension, EPA held a public hearing limited to the fourth criterion (i.e., good faith of individual applicant). EPA granted the suspension to

these 27 applicants in July.

In August, two more manufacturers applied for suspension. A notice of EPA's intent to grant the suspension was published in the Federal Register; for lack of comments no public hearing was held and the suspension requests were granted. In September 1973, one additional manufacturer requested suspension; disposition of that request is pending.

Suspension of NO_x Emission Standard for 1976 Model Year Light-Duty Vehicles

On July 30, 1973, after 9 days of public hearings, the Administrator granted Ford Motor Co., General Motors Corp., and Chrysler Corp. a suspension of the effective date of the statutory 1976 NO_x emission standard for light-duty vehicles for 1 year as allowed by Section 202(b)(5)(D) of the Clean Air Act.

The Administrator established an interim standard of 2.0 grams per mile. The suspended standard was 0.4 grams per mile.

There are several manufacturers who have not yet applied for a suspension, but they are expected to do so by the end of this year. The only criterion that will have to be evaluated with respect to these manufacturers is the good faith of their efforts.

Certification Testing

Certification of new passenger cars for compliance with Federal emission standards began with 1968 model

year vehicles. The program includes testing prototype vehicles which represent all new motor vehicles sold in the United States. The manufacturer is required to submit data showing that prototypes conform to Federal standards for exhaust, crankcase, and fuel evaporative emissions. EPA carries out a review of the manufacturers data and performs confirmatory tests on selected prototypes.

During the past year, certification of 1974 model year light-duty vehicles and heavy-duty engines was completed. Test programs of approximately 50 manufacturers were monitored and data from over 600 fleet vehicles and engines were reviewed. This year's certification program represented a major increase in vehicles of each type over the previous model year and required that EPA conduct over 1,200 planned emission tests.

Limited Certificates of Conformity

Ford Motor Co., International Harvester Co., and General Motors Corp. encountered scheduling problems which made it impossible to complete their certification programs prior to production start-up dates. To avoid the severe economic repercussions associated with plant shutdowns, EPA issued limited certificates to permit shipping vehicles. Limited certificates included elaborate safeguards to assure that no uncertified

vehicles would be sold to an ultimate purchaser. The first limited certificates were issued in August. By the end of September, all such limited certificates had been replaced with full certificates.

California Request for Waiver of Pre-emption for 1975 Model Year Light-Duty Trucks

The 1975 model year suspension decision granted, in part, California's request for waiver with respect to 1975 model year light-duty passenger vehicles. On Aug. 17, California requested a waiver with respect to 1975 model year light-duty trucks. A public hearing was held in San Francisco on Oct. 2, 1973. On Nov. 1, 1973, the Administrator denied California's waiver request on the grounds that insufficient lead time existed before the 1975 model year to permit the widespread use of catalysts on 1975 model light-duty trucks. However, in denying the waiver requests the Administrator did permit California to enforce the NO_x standards of 2 gpm which is more stringent than the 3.1 gpm Federal standard for 1975 model light-duty trucks because the 1974 model light-duty trucks sold in California were required to meet the 2 gpm NO_x standards. The Administrator's decision will permit California to enforce its requested standards of .9 gpm HC and 17 gpm CO for 1976 model year light-trucks.

Assessment of Mobile Source Technology

In 1972, EPA formed a task force to assess mobile source emission control technology. In February 1973, the task force issued a report (based on information obtained from vehicle manufacturers, component suppliers, and in-house testing) indicating that only three of 20 manufacturers studied--Honda, Toyo Kogyo (Mazda) and Daimler-Benz--intended to rely on noncatalyst systems to meet 1975 emission standards.[1/] In EPA tests, all three were able to meet the original statutory 1975 standards. Of the manufacturers intending to use catalyst systems, only General Motors, Ford, and Chrysler seemed to have good probabilities of meeting the statutory 1975 standards.

TRANSPORTATION CONTROL PLANS

The United States is divided into 247 Air Quality Control Regions (AQCRs). Thirty-eight AQCRs in 23 States (including the District of Columbia) require transportation control measures, in addition to stationary source emissions controls and the Federal new car emission controls, to attain ambient air quality standards for CO or photochemical oxidants. In addition, the latest air quality data are being examined to identify other AQCRs in which air quality standards for CO or photochemical oxidants might be exceeded. Initial review of these data indicates that standards may be being

1 U.S. Environmental Protection Agency. Automobile emission control - the state-of-the-art as of December, 1972. February 1973.

violated in 20 additional AQCRs. (See Chapter VI.)

A number of States submitted transportation control plans for EPA's approval. When review of the State plan did not demonstrate that air quality standards would be attained, EPA 1) published notice to that effect in the Federal Register and 2) proposed a transportation control plan. EPA's proposed plans were presented at hearings to permit public participation in the proposed rule making. For those States that did not prepare and submit transportation control measures, EPA published in the Federal Register proposed strategies to reduce CO or HC emissions from motor vehicles. Public hearings were also held to consider these proposed transportation control plans. The promulgation of EPA-proposed rule making in the Federal Register was to be completed by late Nov. 1973. Table 3 summarizes the actions EPA has taken, to date, on transportation control plans. It is EPA policy to withdraw its proposed or promulgated plans as soon as an approvable State plan is submitted.

The transportation control plans have been worked out through close cooperation between Federal, State, and local officials. In the California cities where auto-related air pollution is generally considered to be among the worst in the Nation, the transportation controls include parking restrictions, exclusive use of lanes or streets by buses, vehicle inspection-maintenance programs,

Table 3

Status of the Transportation Control Plans[a]

Approved State Plans	Promulgated EPA Plans	Still to be Approved/Promulgated
1. New York City, N. Y.	1. Boston, Mass.	1. Pittsburgh, Pa.
2. Rochester, N. Y.	2. Springfield, Mass.	2. Philadelphia, Pa.
3. Syracuse, N. Y.	3. New Jersey Suburbs of New York City	3. Baltimore, Md.
4. Dayton, Ohio	4. New Jersey Suburbs of Philadelphia, Pa.	4. Washington, D. C.
5. Toledo, Ohio	5. Cincinnati, Ohio	5. Maryland Suburbs of Washington, D. C.
6. Minneapolis, Minn.	6. Houston-Galveston, Tex.	6. Virginia Suburbs of Washington, D. C.
7. Birmingham, Ala.	7. Dallas-Ft. Worth, Tex.	7. Indianapolis, Ind.
8. Mobile, Ala.	8. San Antonio, Tex.	8. Chicago, Ill.
9. Kansas City, Mo.	9. Austin-Waco, Tex.	9. Beaumont, Tex.
10. Kansas City, Kan.	10. El Paso, Tex.	10. Salt Lake City, Utah
11. Baton Rouge, La.	11. Corpus Christi-Victoria, Tex.	11. Phoenix-Tucson, Ariz.
12. Portland, Oreg.	12. Denver, Colo.	12. Seattle, Wash.
	13. Los Angeles, Calif.	13. Spokane, Wash.
	14. San Francisco, Calif.	14. Portland, Oreg.
	15. San Diego, Calif.	
	16. Fresno, Calif.	
	17. Sacramento, Calif.	

a As of Nov. 6, 1973. Some interstate AQCRs are listed more than once, therefore the total is not 38.

mass transit incentive plans by employers, controls on gas handling operations, special treatment for buses and car pools on military installations, metered ramps on some highway entrances with bypass lanes for buses and car pools, retrofit of air pollution controls devices on autos, and a contingency strategy of gasoline limitations.

Most of the other urban plans contain some combination of these controls, depending on the severity of the local air pollution problem. The types of control techniques employed are summarized in Table 4.

EPA intends to ask Congress for flexibility in working out achievable schedules for those cities requiring drastic control measures. However, EPA believes that all of the control techniques are reasonable and feasible except for severe gasoline limitations.

ADDITIONAL ACTIVITIES IN THE MOBILE SOURCE AREA

NO_x Emission Standard

The previous reference method for nitrogen dioxide (the so-called Jacobs-Hochheiser method) was recently found to be inadequate. Because of problems in collection efficiency and NO_x interference, it cannot be used for accurate measurement of ambient atmosphere. As a result of measurements made with other monitoring instrumentation, 43 Air Quality Control Regions (AQCRs) throughout the country previously classified as being

Table 4

Control Measures Used in
Transportation Control Plans

Additional Stationary Source Controls

Filling storage tanks at service stations
Filling auto tanks
Loading and unloading barges
Solvent and degreasing operations
Architectural coating operations
Dry cleaning establishments

Inspection and Maintenance

Light-Duty Vehicle
Heavy-Duty Vehicle

Traffic Flow/Transit

Improved mass transit
Improved traffic flow
Bus-car pool lanes
Car pool matching system
Transportation by-pass

Traffic Disincentives

Parking restrictions
Bridge tolls
Vehicle-free zones
Delivery bans
Idling restrictions
Taxi cruise restrictions
Motorcycle limits

Mechanical Retrofit

Vacuum spark advance disconnect
Air bleed
Catalyst
High-altitude modifications
Truck retrofit

Gasoline Limitations

in violation of health-protective primary standards were found not to be in violation. Two AQCRs definitely remain in violation. In one, Chicago, the statutory NO_x emission reduction for automobiles will not be necessary to meet primary standards. In the other instance, Los Angeles, achievement of the statutory NO_x emission reduction would fail to result in air quality that would meet established goals until 1990. Consequently, EPA recommended that Congress consider the revision of the statutory 1977 model year, 90 percent NO_x emission reduction standard contained in the Clean Air Act of 1970.

Automotive Exhaust Emission Survey

Several studies have been commissioned by EPA to determine exhaust emissions from in-use motor vehicles. The most recent study, a survey of 1957 to 1971 model year vehicles based on the improved test procedures applicable to 1975 model year vehicles, shows a significant downward trend in HC and CO emissions since the advent of Federal emissions standards.[2] However, during the same time period, NO_x emissions have increased. The data are summarized in Table 5.

---

2 Automobile Exhaust Emission Surveillance; A Summary. Calspan Corp., Buffalo, New York, March 1973. Under contract to EPA, this organization analyzed data obtained by EPA funded surveillance programs.

Table 5

Emission Levels of In-Use Vehicles[2]

Model Year	HC Grams/mile	HC % change	CO Grams/mile	CO % change	NO_x Grams/mile	NO_x % change
Pre-Controlled (1957-67)	8.74		86.5		3.54[a]	
1968	5.54	-37%	67.8	-23%	4.34	+22%
1969	5.19	-41%	61.7	-29%	5.45	+52%
1970	3.90	-55%	48.2	-44%	5.05	+43%
1971	3.06	-65%	40.1	-54%	4.81	+35%
1968-71 (Average)	4.42	-49%	54.4	-37%	4.91	+39%

a NO_x regulated starting with 1973 model year.

The data also showed that most cars exceeded either the CO or the HC standards applicable to their model year. This can probably be attributed to a combination of factors including: 1) problems with quality control of production vehicles; 2) the fact that the cars were tested in the condition in which they were found and may not have been maintained properly; and 3) because emissions averaging was allowed in the certification of prototypes through 1971 to determine compliance with the standards.

Auto Fuel Economy Labeling Program

In the President's Energy Message to Congress of April 16, 1973, EPA was assigned (in cooperation with the Department of Commerce and the Council on Environ-

---

2 Automobile Exhaust Emission Surveillance; A Summary. Calspan Corp., Buffalo, New York, March 1973. Under contract to EPA, this organization analyzed data obtained by EPA funded surveillance programs.

mental Quality) the responsibility of developing a program to inform the public on fuel economy characteristics of automobiles. EPA published proposed procedures in an Aug. 27, 1973 Federal Register notice.

The implementation of the program depends on auto manufacturers voluntarily displaying one of two approved labels beside the car price sticker. One label would provide general information regarding average fuel consumption for cars tested in the same weight class. The alternative label would offer the same information plus the specific test results for the model of car offered for sale. (See Figure 1.) The miles-per-gallon information was developed at the EPA testing facility in Ann Arbor, Michigan. The test prccedure is the same as used for the emission certification program and is based on an urban/suburban driving cycle. To date, auto manufacturers representing approximately 90 percent of the U.S. new car market have agreed to participate in the voluntary program. EPA is providing participating auto dealers with a pamphlet which describes the concept of fuel economy and its importance as a criterion for new car buyers.

Clean Car Incentive Program

The Federal Clean Car Incentive Program is designed to foster development of new types of low-emission vehicles capable of meeting 1976 standards. EPA leases a

Figure 1

ILLUSTRATIVE LABEL FOR 1974 VEHICLES--SPECIFIC INFORMATION

Based on the results of tests conducted or certified by the U.S. Environmental Protection Agency, the fuel consumption of this vehicle is estimated to be:

17 Miles Per Gallon

on an EPA test cycle which simulates commuter-type driving.

The table below shows miles per gallon (MPG) performance and fuel costs for vehicles in different weight categories. The test weight and the measured fuel economy of this vehicle are circled. These figures are not indicative of performance during highway driving.

Vehicle Test Weight (lbs.)	Range of MPG	Average MPG	Fuel Costs (10,000 mi. & 40¢/gal.)
2,000	22-29	24	$165
2,250	19-25	21.5	$195
2,500	17-22.5	18.5	$215
2,950	10.5-24.5	17.5	$230
3,000/3100/	9-20	15.5/17/	$265/235/
3,500	10.5-20	13.5	$295
4,000	6.5-19	10.5	$380
4,500	7.5-14	9.5	$420
5,000	7-11	9	$445
5,500	7-10.5	8.5	$500

The actual fuel economy of this vehicle will depend on factors such as individual driving habits, the maintenance condition of the vehicle, and the optional equipment chosen. Additional fuel economy information is available from your dealer and from the U.S. Environmental Protection Agency, Washington, D.C.

candidate prototype which is subjected to stringent emission and performance tests. If the prototype passes the initial tests, EPA may purchase additional prototype cars for testing. Up to 500 vehicles may be purchased for further evaluation and limited fleet use.

The program began in January 1971. Approximately 20 proposals were received, of which seven were accepted for further study. Three remain in the program, and only one prototype has been tested. This vehicle (powered by an internal combustion engine with catalytic exhaust treatment and exhaust gas recirculation) has often met the 1976 emission standards during testing but its durability has not been acceptable.

Low-Emission Vehicle Purchase Program

Section 212 of the Clean Air Act provides for the creation of a Low-Emission Vehicle Certification Board. If EPA determines a vehicle has emissions substantially lower than existing standards, the Board has the responsibility of certifying whether the vehicle meets specification for purchase by the Federal Government.[a] Certified vehicles may be purchased for use in Government fleets at premiums of up to 50 percent over prices normally paid for equivalent vehicles (100 percent if the vehicle is

---

a EPA has proposed that advanced technology or production techniques be required for a vehicle to qualify as a "Low-Emission Vehicle."

inherently low polluting). To date, one group of battery-powered heavy-duty vehicles covered by a single application have been determined to be low-emission vehicles, but in September 1973 the Board rejected vehicles covered by the application as unsuitable for use by the Federal Government, because their maximum cruising speed was too slow. In addition, one application for an electric bus has been completed, and two other notices of intent to apply have been filed, both for electric-powered vehicles.

MOBILE SOURCE RESEARCH AND DEVELOPMENT

Alternative Automotive Power Systems Program

EPA's program to develop alternative automotive power systems has concentrated on the three most promising systems: the gas turbine, the Rankine cycle, and the stratified charge engines.

Gas turbine designs under development have met the statutory 1975 standards, and demonstration of an improved gas turbine engine for passenger cars meeting statutory 1976 emission standards is projected for 1975.

Major problems with the Rankine cycle (high-emission levels, bulky components, valving complexity) have now been solved, and plans call for developing and demonstrating a prototype in 1974.

The stratified charge engine has shown the most promising results to date. Stratified charge engines with

oxidation catalysts and exhaust gas recirculation have demonstrated emission levels well below statutory 1976 standards at favorable fuel costs. Significant problems with the durability of engine and vehicle systems remain.

Research and Development on Aircraft Emissions

EPA has promulgated regulations to control emissions of CO, HC, NO_x, and smoke from both commercial and general aviation aircraft. In the development of these regulations, extensive programs were conducted to determine the impact of aircraft emissions on air quality, the level of emissions from present aircraft, and the technological feasibility of controlling aircraft emissions. Present aircraft emission research efforts are concentrated in three areas:

- o analysis of the feasibility of modification of aircraft ground operation procedures for emission reduction
- o refinement of emission measurement procedures
- o assessment of progress in development of low-emission aircraft engines.

Efforts will continue in these areas. In addition, projects may be initiated to develop emission control technology for particular aircraft types.

Other Government agencies have programs involving various aspects of the aircraft emissions problem. Major programs include the Department of Transportation's Climatic Impact Assessment Program designed to determine

the potential impact of high-altitude supersonic flight, NASA's Clean Combustor Program designed to develop low-emission combustion systems for jumbo jet engines, and the Air Force's program to develop low-emission engines and afterburning measurement procedures. These and other projects form the nucleus of the Government's aircraft emission control program.

III. THE DEVELOPMENT OF AIR QUALITY CRITERIA AND RECOMMENDED EMISSION CONTROL REQUIREMENTS

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

As a result of EPA's continuing review of the criteria used in setting ambient air quality standards, the annual secondary ambient air quality standard for sulfur dioxides (SO_2) was revoked. Secondary standards are set at a level intended to protect against welfare effects. The annual secondary standard was revoked because new scientific data suggest that vegetation is damaged from high, short-term concentrations of SO_2 during the growing season, rather than continuous exposures to lower levels. The other secondary SO_2 standard, which specified a maximum 3-hour concentration, remains in effect.

In June, EPA published Effects of Sulfur Oxide in the Atmosphere on Vegetation.[3] This document revised Chapter 5 and portions of Chapter 10, of the Air Quality Criteria for Sulfur Oxides document. EPA is continuously working on improving the basis for existing standards, developing the basis for new ones, and reviewing the criteria and control techniques documents.

---

3 U.S. Environmental Protection Agency, Effects of Sulfur Oxide in the Atmosphere on Vegetation; Revised Chapter 5 for Air Quality Criteria for Sulfur Oxides, National Environmental Research Center, Research Triangle Park, N.C. 27711

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPs)

On April 6, National Emission Standards for Hazardous Air Pollutants were promulgated for asbestos, beryllium, and mercury (see Table 6). These are the first three substances to be controlled under Section 112 of the Clean Air Act.

As required by Section 112(b)(2) of the Clean Air Act, the Administrator has issued information on pollution control techniques for asbestos, beryllium, and mercury.

EPA is currently determining the optimum statutory and regulatory procedures for controlling several other pollutants. The Act provides several control mechanisms: National Ambient Air Quality Standards (Sec. 109); the non-criteria pollutant clause (Sec. 111(d)) of New Source Performance Standards (Sec. 111); the National Emission Standards for Hazardous Air Pollutants (Sec. 112); and the regulation of fuels and fuel additives (Sec. 210).

NEW SOURCE PERFORMANCE STANDARDS (NSPS)

On June 5, 1973, EPA proposed New Source Performance Standards for asphalt concrete plants, petroleum refineries, petroleum storage tanks, secondary lead smelters, secondary brass and bronze ingot production plants, iron and steel plants (basic oxygen furnaces), and municipal

Table 6

Sources Regulated by National Emission Standards for Hazardous Air Pollutants

POLLUTANT	HEALTH EFFECT	SOURCES REGULATED
Asbestos	Bronchial cancer Cancers of membranes, lining of chest, and abdomen	Roadway surfacing when asbestos tailings are used, building demolition, asbestos mills, selected manufacturing operations, and spray-on asbestos materials
Beryllium	Acute and chronic lethal inhalation effects Skin and eye effects	Extraction plants, foundries, ceramic manufacturing plants, machine shops, rocket testing facilities and disposal of beryllium containing wastes
Mercury	Central nervous system injury Kidney damage	Ore processing for mercury recovery, plants using mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide

sewage treatment plant incinerators. While the seven proposed standards are primarily for new plants, they also apply to an existing plant which is modified in such a manner as to increase its emissions. Final standards are expected late in 1973. Table 7 summarizes these standards.

On October 15, 1973, EPA promulgated final regulations relating to periods of start up, shutdown, and malfunction of sources subject to NSPS. These regulations clarify the compliance status of sources during the specified periods. The regulations make it clear that compliance with existing new source standards, other than for opacity of emissions, is determined through performance tests conducted under representative operating conditions. These tests are conducted within 60 days after a new plant achieves its maximum production rate, but not later than 180 days after start up. Subsequent tests may be made at any time. Existing opacity standards, pertaining to visual observations of emissions, would not be applied during periods of start up, shutdown, or malfunction. However, the owner or operator would have to show that any violations of the opacity standard occurred only during start up, shutdown, or malfunction.

Under the regulations, plant operators would be required to use maintenance and operating procedures designed to minimize any excess emissions during start up, shutdown or malfunction. Owners and operators would also

Table 7

NEW SOURCE PERFORMANCE STANDARDS PROPOSED IN 1973 [a]

Industry	Percentage Reduction of Uncontrolled Emissions			
	Particulates	Carbon Monoxide	Hydro-Carbons	Sulfur Dioxide
Asphalt concrete plants	99.7			
Petroleum refineries	93	99.5		[b]
Petroleum storage tanks			80	
Secondary lead smelters	80			
Secondary brass and bronze ingot production plants	97			
Iron and steel plants (basic oxygen furnace)	99			
Sewage treatment plant incinerators	96.6-99.6			

[a] First 10 months only

[b] The input quantity of hydrogen sulfide is regulated in order to control sulfur dioxide emissions.

have to file a written report for each calendar quarter covering those time periods when emissions are known or estimated to have exceeded the standards.

HEALTH EFFECTS RESEARCH

The Community Health Effects Surveillance Studies (CHESS) program was initiated to provide data relating human health effects to long and short-term exposure of population subgroups to SO_x, respirable particulates, NO_x, CO, and photochemical oxidants. The CHESS Studies have demonstrated the benefits from improved air quality with respect to the chronic respiratory disease experience of subjects who have moved to communities having cleaner air. Also, the studies have shown that children living for 3 or more years in communities having high levels of air pollution have more acute respiratory disease episodes than recent immigrants to the community.

Data obtained from the CHESS program indicate that adverse health effects are consistently associated with exposure to suspended sulfates, indeed, more so than to SO_2 or total suspended particulates. This information has initiated further study in the transport processes and control techniques for suspended sulfates.

Studies were initiated to evaluate potential health effects of fuel and fuel additive emissions from internal combustion engines. As a result of this work it has been determined that the physiological availability of lead compounds from street dust is similar to that of other lead compounds.

IV. THE STATUS OF ENFORCEMENT ACTIONS TAKEN PURSUANT TO THIS ACT

Significant enforcement actions were taken by EPA under several sections of the Clean Air Act during the past year. These included: Section 113 notices of violation and orders under Title I. Inspections, investigations and referrals for prosecution under Title II with respect to certification, warranties, recalls, tampering with emission control systems, and importation of vehicles that do not meet emission standards.

STATIONARY SOURCE ENFORCEMENT ACTIONS

EPA air enforcement activities concerning stationary sources were initiated following the May 31, 1972, approval of most portions of State plans to meet the National Ambient Air Quality Standards. Since then, enforcement activities have concentrated on:

- o Establishing reasonable compliance schedules for all major sources
- o Developing a source surveillance program to determine the status of compliance
- o Keeping major sources in compliance or on compliance schedules.

Enforcement of State Implementation Plan Regulations

During the first ten months of 1973, enforcement actions have been initiated against approximately 66

facilities. This is a significant increase from the six actions taken during 1972. These actions represent a supplement to State enforcement activities. In some cases these actions were taken to establish reasonable compliance schedules. In other cases, the actions were designed to achieve compliance with previously established schedules. These actions include notices of violation, abatement orders, and civil/criminal proceedings and are summarized in the Appendix. Some 600 EPA investigations were in progress in the last quarter of 1973. Most actions taken were against flagrant violators and were initiated because of State failure or inability to act; these actions were prompted by citizen complaint, or through routine EPA investigations.

As various requirements of State Implementation Plans become effective through July 1975, enforcement activity related to stationary sources is expected to increase substantially.

State Implementation Plan Compliance Schedules

The key to enforcement of stationary source regulations is the establishment of meaningful compliance schedules. A compliance schedule sets forth increments of progress which a source must take toward final compliance. The objective is to ensure that action is not postponed until it is too late to meet the compliance date. All sources subject to regulations with final

compliance dates after January 31, 1974, are required to be covered by an enforceable compliance schedule involving increments of progress. Development of the schedules is primarily a State responsibility. However, many States did not fully satisfy these compliance schedule requirements and EPA has had to promulgate schedules affecting approximately 3500 facilities. In most cases where EPA has had to promulgate compliance schedules, it has promulgated categorical schedules applying to all sources in a given source category subject to a given regulation. An additional 10,000 facilities need to be placed on schedules. Schedules for about 2,540 facilities have been submitted by the States and an additional 3,000 facilities are expected to be handled by the States. The remainder of the problem will need to be resolved by EPA by July 1974.

Enforcement of National Emission Standards for Hazardous Air Pollutants

National emission standards for mercury, beryllium, and asbestos were promulgated by EPA on April 6, 1973. As mandated by the Clean Air Act, EPA completed issuance of waivers of compliance for affected sources making request. Some 600 facilities are subject to the regulations. About 413 of them are presently in compliance; the remainder are scheduled to be in

compliance by April 6, 1975. In addition to these facilities, all operations which involve spraying asbestos materials (containing greater than 1 percent asbestos) and demolition operations are subject to the regulations. EPA has initiated two enforcement actions to date against demolition contractors.

MOBILE SOURCE ENFORCEMENT ACTIONS

EPA's enforcement activity in the mobile source area has increased greatly this year. Table 8 summarizes the mobile source enforcement actions taken by EPA this year.

Certification Related Inspections/Investigations

In the light-duty vehicle manufacturing area, EPA completed 24 inspections and initiated 18 investigations in the first 10 months of 1973.

In the area of manufacturers compliance inspections, EPA visited domestic, European, and Japanese manufacturing facilities. These inspection trips have resulted in several follow-up investigations of apparent irregularities and hence have served to ensure greater compliance with the purposes and intent of the Clean Air Act.

The investigations all concerned possible violations by automobile manufacturers of the Act and regulations promulgated thereunder. Three of the investigations have thus far been referred to the Department of Justice and are awaiting final disposition.

Table 8

Summary of Mobile Source Enforcement Actions

Type of Source	Inspections/ Investigations[a]	Administrative Orders	Referrals to the Dept. of Justice
New Sources			
Automotive Manufacturers	24 Inspections 18 Investigations	1	4
In-Use Sources			
Recall	23 Investigations	1	0
Tampering	28 Investigations	0	2
Imports	12 Investigations	212	1
Warranties	1 Investigation	0	0

a Inspections are scheduled, detailed inspections of vehicle manufacturers (or importers) records, documents, and procedures supporting application for certification. Investigations are searches of records and documents and interrogation of individuals to determine whether violations of the Clean Air Act and applicable regulations have occurred.

On Feb. 2, EPA referred to the Department of Justice a case involving the Chevrolet Division of General Motors. The case involved production vehicle weights which differed materially from the weights reported for certification test vehicles. General Motors was required by a Feb. 15, 1973, letter from EPA to recall 2,290 Chevrolets.

A second investigation involved the conflict in testimony between Chrysler Corp. and Engelhard Industries Division representatives during the public hearings on applications for suspension of the 1975 motor vehicle emission standards. The case was referred to the Department of Justice on June 12, 1973. The final outcome is still pending.

The third investigation referred to the Department of Justice during the first 10 months of 1973 concerned the failure to report the existence of and the use of possible defeat devices by Volkswagen on a substantial number of 1973 model year vehicles. The case was referred on July 17 to the Department of Justice for appropriate legal action.

In addition, the Department of Justice finalized on February 13, 1973, the Ford case which EPA had referred to them in September 1972. Ford Motor was fined $7 million for illegal activity with respect to its 1973 certification vehicles.

Affirmative enforcement action was also taken with regard to devices which manufacturers were installing on new vehicles which would, in their operation, defeat the effectiveness of emission control systems under conditions not experienced during EPA's certification testing. In December 1972, EPA notified six manufacturers that certain devices had to be removed by Feb. 15 or March 15, 1973, depending upon the complexity of the required change. A hearing was held in January to discuss the classification of the devices and the deadline dates for removal. On Feb. 19, EPA ruled that one specific device, a spark delay valve, had been improperly classified in the December ruling and therefore did not have to be removed. All remaining devices, however, were required to be removed by March 15.

Warranty Related Enforcement Actions

The written warranties of all 1972 and 1973 vehicle and engine manufacturers have been reviewed to see if they comply with the law. Where appropriate, vehicle manufacturers have been required to modify language in the warranties. One investigation was undertaken when a dealer refused to honor the emission warranty. The dealer relented before any formal action was necessary.

Recall/Surveillance and Related Enforcement Actions

Since January 1973, 23 investigations of potential recall situations have been initiated by EPA. As of this time, EPA has ordered one recall; this involved the 2,290 vehicles manufactured by General Motor's Chevrolet Division.

In addition, several other important projects are currently underway. The 1972 In-Use Compliance Testing Program is almost complete. Under this program 3,000 1972 model year vehicles from 24 vehicle classes were tested to determine whether all classes comply with emission standards. A surveillance program is being developed to augment the In-Use Compliance Testing Program. The surveillance program will obtain data from fleet owners, automobile clubs, private diagnostic centers and State inspection/emission programs which will indicate emission performance of vehicles in use and serve to identify potential recall candidates. As more States undertake emissions testing programs, they will be incorporated into this surveillance program.

Tampering-Related Enforcement Actions

EPA initiated investigations of 28 reported instances of tampering by dealers or manufacturers during the first 10 months of 1973. Thirteen of these investigations have been concluded. Two cases have been referred to the Department of Justice for

appropriate legal action. One has already resulted in a suit being filed against the Haney Chevrolet Corporation of Orlando, Florida.

Import-Related Enforcement Actions

Appropriate steps have been taken to advise the general public of the import restrictions concerning non-conforming vehicles, and working relations have been established with U.S. Customs at all major ports. A centralized EPA-Customs import monitoring system has resulted in 212 administrative orders directing: the modification of 180 vehicles, exportation of 26 vehicles, and the forfeiture of Customs bonds for 6 vehicles which did not conform to emission standards when imported. In addition, twelve investigations of apparent violations of regulations have been conducted and the first referral of a case of illegal importation to the Department of Justice occurred in July 1973.

ENFORCEMENT OF SECTION 306 - FEDERAL PROCUREMENT

On June 21, EPA proposed regulations that would make air polluters ineligible for certain contracts, grants, or loans from the Federal Government. The regulation is to be effective July 1, 1974. It covers prime as well as sublevels of contractors grantees, and borrowers. With assistance from the States, EPA will compile a list of violating facilities for

circulation among other Federal agencies. No facility would be listed until EPA found adequate evidence of a violation and until the facility's representatives and legal counsel had the opportunity to consult with EPA.

V. THE STATUS OF STATE STANDARDS SETTING, INCLUDING SUCH PLANS FOR IMPLEMENTATION AS HAVE BEEN DEVELOPED

States were required to submit to EPA by Jan. 31, 1972, a State Implementation Plan (SIP) for attainment of National Ambient Air Quality Standards for five criteria pollutants--sulfur dioxide, particulate matter, carbon monoxide, photochemical oxidants, and nitrogen dioxide.

A priority classification system was established to categorize the Nation's 247 Air Quality Control Regions (AQCRs) according to the severity of their air pollution problem. The classifications were based on measured ambient air concentrations (when they were known) or on estimated air quality in the area of maximum pollutant concentration. The SIP requirements vary according to the priority classification so that the time and resources to be expended in both developing and carrying out the plan are commensurate with the air pollution problem.

AQCRs are classified for each of the six criteria pollutants as follows:

Priority I: ambient concentrations significantly above primary standards.

Priority Ia: ambient concentrations significantly above primary standards due to emissions from a single point source.

Priority II: ambient concentrations significantly above secondard standards.

Priority III: ambient concentrations below secondary standards.

Table 9 summarizes the AQCR priority classifications for the various pollutants.

Table 9

Priority Classifications of Air Quality Control Regions

Pollutant	Priority I	Priority Ia[a]	Priority II	Priority III
Particulate Matter	108	11	71	57
Sulfur dioxide	39	21	41	146
Carbon monoxide	29	--	--	218[a]
Nitrogen dioxide[a]	4	--	--	243
Oxidant/hydrocarbon	54	--	--	193

a Assuming reclassification is promulgated as proposed. See Chapter V.

ISSUES AFFECTING DEVELOPMENT AND IMPLEMENTATION OF STATE IMPLEMENTATION PLANS

Revocation of Annual Secondary Sulfur Dioxide (SO_2) Standards

On Sept. 14, 1973, EPA revoked the annual secondary SO_2 standard of 60 micrograms per cubic meter of air. New scientific data suggested that vegetation damage arises from high short-term concentrations of SO_2 rather than from continuous exposure to lower levels. EPA concluded that the existing SO_2 criteria document could not support the secondary annual standard. The primary SO_2 standards and the short-term secondary SO_2 standard remain in effect.

SIPs with approved SO_2 control regulations remain in effect.

Reclassification of AQCRs with respect to NO_2

On June 5, 1973, EPA, based on new ambient air quality data, proposed in the Federal Register to reclassify 43 of the 47 Priority I AQCRs with respect to NO_2 Priority III. Two of the four remaining Priority I AQCRs need further evaluation.

EPA also indicated that Denver, a Priority III AQCR, may have to be reclassified Priority I. These reclassifications affect the control strategies that will be required in the reclassified AQCRs.

Prevention of Significant Deterioration of Air Quality

On May 30, 1972, as the result of a suit filed by the Sierra Club, EPA was ordered by the District Court of the District of Columbia to disapprove all SIPs which do "not prevent significant deterioration of air quality" in currently clean areas and to promulgate new regulations which would prevent significant deterioration. The District Court order was appealed to the Court of Appeals where it was affirmed, and subsequently to the Supreme Court, where it was affirmed by a tie vote. (June, 1973.) As a result of the initial court action, all SIPs were disapproved on Nov. 9, 1972, to the extent that they did not explicitly "prevent significant deterioration."

Four alternative sets of regulations to prevent significant deterioration of air quality were proposed in the Federal Register of July 16, 1973. EPA is soliciting widespread public participation in the rule-making activity because, despite the extensive litigation, there is no guidance available regarding what level of deterioration is significant," nor what procedures should be implemented to prevent that level of deterioration from occurring. To this end, public hearings on the significant deterioration issue were held and a 90-day period for public comment was established.

Indirect Sources/Maintenance of Standards

In response to a court order, EPA developed and promulgated regulations designed to ensure continuing maintenance of the National Ambient Air Quality Standards. These regulations establish two new requirements related to implementation of the Clean Air Act:

1. Indirect Sources--State or local agencies must set up procedures to assess the air quality impact of new facilities, such as shopping centers and sports arenas, which could generate significant auto traffic, i.e., indirect sources. This requirement supplements the existing requirement to assess the air quality impact of pollutants emitted directly from new facilities.

2. Maintenance of Standards--States must identify areas where projected growth and development could result in violation of the national standards during the next ten years, and they must submit an analysis of such potential problems and plans for dealing with them. The analysis must deal with all significant air quality implications of growth and development, including additional air pollution from new commercial, industrial, and residential development, and from increased demand for electricity and heat, from motor vehicle traffic, and from production of solid waste.

States were required to identify potential problem areas within nine months and to submit their problem analyses and SIP revisions for maintenance of standards within 24 months.

However, by court order they were only given until August 15, 1973, to submit their SIP revisions for indirect sources.

To date, only eight States have submitted their SIP revisions for indirect sources to EPA. As required by the Clean Air Act, EPA will promulgate regulations for those States that do not submit their own regulations, or whose submittals are disapproved. EPA's regulation will be withdrawn as acceptable State regulations are received.

Clean Fuels Shortage

Because of possible shortages of clean fuels (low-sulfur fuels) and flue gas desulfurization equipment, EPA has developed a clean fuels policy to encourage the States to:

- set attainment of the secondary SO_2 standards at a reasonable date but later than the attainment of primary standards; and
- revise their control regulations to the degree necessary to meet standards without excessive control requirements.

The shortage of low-sulfur coal is most severe in coal-burning utilities in EPA Regions III, IV, and V, where

most of the Nation's coal is burned. Progress is being made in the implementation of this policy. In order to overcome any shortages of clean fuels during the winter of 1973-74, EPA has established expedited procedures for the processing of requests for variances (for the use of high-sulfur content fuels) from the States. The variances are considered SIP revisions, therefore requiring approval by the Administrator of EPA. The expedited procedures are designed to assure realistic action on the requests, while protecting the public health and welfare.

Extensions for Developing and Implementing SIPs

The Clean Air Act provides for extensions of up to 2 years beyond the 1975 goal for attainment of primary National Ambient Air Quality Standards in those AQCRs where needed technology or other alternatives either are not available or will not be available soon enough to attain the primary standards. At present, nine AQCRs in seven States have been granted extensions for attainment of primary standards, primarily for SO_2 emissions from copper smelters. In six of these AQCRs, EPA is required to promulgate regulations, and an extension was provided as part of EPA's control strategy. It is likely that additional extensions will be provided as a part of the transportation control plans. These plans were discussed in detail in Chapter II.

The Clean Air Act also provides for 18-month extensions for submitting plans for attaining secondary standards. On May 31, 1972, EPA granted 18-month extensions to 19 States involving 31 AQCRs to prepare control strategies for the criteria pollutants for which secondary standards have been set, i.e., particulate matter and SO_2. Thirteen States were required to submit particulate matter control plans by July 31, 1973. Because of the announcement on May 12, 1973, that SO_2 secondary standards might be revised, States now have until Jan. 30, 1974, to submit their SO_2 control strategies.

The Clean Air Act requires that secondary ambient air quality standards be met within a "reasonable time." EPA has defined reasonable time as the time required to design, fabricate and install reasonably available control technology. Thus, in developing their control strategies for meeting secondary standards, States can postpone the application of control technology only in those cases where the control strategy would have a severe adverse economic or social impact.

Supplementary Control Systems

EPA proposed regulations on Sept. 14, 1973, for the use of Supplementary Control Systems (SCS) and requested public comment. SCS is a temporary measure applicable only to isolated smelters and coal-fired power plants,

where the sole alternatives are permanent curtailment of production, closing of the plants, or delays in attainment of the standards. The essence of SCS is to allow the pollution source, subject to certain restraints, to cut back or modify its operations as necessary to permit adequate dispersion of air pollutants.

Uncertainty as to whether EPA would allow the use of SCS has affected promulgation of final regulations for copper smelters. Promulgation of the SCS proposal will allow EPA to complete the development of control strategies to achieve the secondary standards.

Public Comments on Plan Revisions

As a result of a decision by the Sixth Circuit Court of Appeals, EPA will provide an opportunity for public comments prior to its approval of implementation plans or revisions thereof. Public hearings continue to be required during the State's development of the plan or revision.

Fugitive Dust

Fugitive dust--particulate matter from unpaved roads, agricultural lands, construction sites, and other similar sources--caused several western States to fail to demonstrate attainment of standards for particulate matter. Additional data have been collected and initial results indicate that extreme control measures may be required in the affected areas to attain particulate matter standards. However, alternative

solutions are expected.

STATUS OF STATE IMPLEMENTATION PLAN APPROVALS, DISAPPROVALS, AND PROMULGATIONS

Plans were submitted by all 55 jurisdictions--50 States plus the District of Columbia, Guam, American Samoa, Puerto Rico, and the Virgin Islands. On May 31, 1972, EPA fully approved only 14 of the 55 plans. The 41 remaining plans were disapproved in part because of the lack of, or deficiency in, one or more regulatory portions of the plan (e.g., public access to emission data, or faulty emission regulations). In these cases, EPA was required to propose and promulgate substitute regulations. It is and has been EPA's policy to rescind its regulations when States enact adequate legislation or regulations.

As shown in Table 10, there are currently 20 State plans with all regulatory portions approved. This summary includes EPA approval/disapproval proposals which have not yet been promulgated. It is anticipated that additional action may be necessary in some of these 20 States at a later date, depending on how those States respond to requirements involving 18-month extensions, maintenance of the national standards, and significant deterioration of air quality.

Table 10

Status of State Implementation Plans (SIPs)[a]

Status		Number of States
SIPs fully approved by EPA		15
SIPs with only non-regulatory sections disapproved by EPA (no EPA action required)		5
SIPs with sections proposed by EPA		19
EPA proposals finalized	11	
EPA proposals incomplete (action pending on some sections)	8	
SIPs with sections awaiting final internal EPA action before being proposed		16
Total Plans		55

a Does not reflect plan disapprovals with respect to "significant deterioration", extensions, or indirect sources/maintenance of standards.

VI. THE EXTENT OF DEVELOPMENT AND EXPANSION OF AIR POLLUTION MONITORING SYSTEMS

EPA is responsible for conducting an ambient air monitoring program to:

- o Assess compliance with or progress made toward meeting ambient air quality standards.
- o Activate emergency control procedures intended to prevent acute episodes of air pollution.
- o Determine pollution trends.
- o Develop a data base for assessment of pollutant effects; land use and transportation planning; study of pollutant interactions, patterns, and trends; evaluation of abatement strategies and enforcement of control regulations; and improving the reliability of diffusion models.

EPA also has the responsibility for source monitoring to:

- o Develop and assess compliance with New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants.
- o Measure emission trends to assure attainment and maintenance of State Implementation Plan (SIP) emission limitations.

Under the requirements of the SIP development process, the States were given the responsibility for establishing monitoring networks for accomplishing these objectives. EPA has given the States both technical and financial assistance in establishing the networks. A summary of the States' progress toward achieving the minimum required monitoring network size is shown in Table 11. The total number of required, proposed, and existing stations are summarized in Table 12. As this table shows, the total number of existing stations in a given category, in some instances, exceeds the 1974 legal requirements. This is in spite of the fact that many individual AQCRs do not meet the minimum requirements.

EPA has developed a data bank for storage and retrieval of both air quality and emission data. The air quality data bank contains information from over 4,000 monitors. The emission bank has information on nearly 70,000 point sources and 3,300 area sources throughout the country. Access to the data are through terminals located at Research Triangle Park, N. C. and in the 10 EPA Regional Offices. Changes to these data banks are made through quarterly and semi-annual reports.

PROGRESS IN THE DEVELOPMENT OF MONITORING SYSTEMS

Decentralization of Monitoring

In 1972, EPA decided to decentralize the Federal National Air Surveillance Network (NASN) from Headquarters

Table 11

Status of Air Quality Control Regions (AQCRs) with Respect to State Implementation Plan (SIP) Monitoring Requirements (September 1973)[a]

Pollutant	Number of AQCRs Requiring Monitoring by SIPs	Number of AQCRs Meeting Minimum Requirements of SIPs	Number of AQCRs Not Meeting Minimum Requirements of SIPs
Total Suspended Particulates	247	152	95
SO_2	247	110	137
CO	29	6	23
Oxidants	54	5	49
NO_2[b]	45	0	45

a Based on 1972 data.

b The standards reference measurement method is being re-evaluated. A new method and monitoring frequency will be named. Does not account for proposed reclassification.

Table 12

Comparison of Numbers of Existing and Proposed Monitors with Number Required by SIPs[a]

Pollutant	Number of Monitors		
	Existing	Required by SIP Regulations	Proposed In SIPs
Total Suspended Particulate-Tape	397	497	901
Total Suspended Particulate-Hi-Vol	2,538	1,372	3,511
SO_2 Bubbler	541	666	1,431
SO_2-Continuous	329	213	698
CO-Continuous	197	133	457
Oxidants-Continuous	183	208	458

a More monitors may exist than are required in some categories but the minimum requirements of the SIPs may not be met on an AQCR by AQCR basis because of the actual geographic distribution of the stations. (See Table 11)

to the 10 EPA Regional Offices.[a] This involved the transfer of nearly 200 SO_2 and NO_2 stations and 260 total suspended particulate (TSP) stations, with their related laboratory functions. Since many laboratories in the future will be doing sample analysis, instead of only one as in the past, a comprehensive quality control program is being established to ensure that results from the different laboratories will be comparable. This program is being run by the National Environmental Research Center at Research Triangle Park, N. C. Technical assistance was given on proper laboratory procedures and operation of instruments to provide a smooth and orderly transfer of functions.

Revised Monitoring Requirements and Guidelines

Since last year, five issues emerged which affect the SIP control regulations and could have a significant impact on monitoring requirements:

- o Prevention of significant deterioration of air quality
- o Indirect sources/maintenance of air quality standards
- o Supplementary Control Systems
- o Revocation of secondary annual SO_2 standard
- o Transportation control plans

---

a Some stations have been transferred to State control.

These issues were defined in Chapter V. All of them may either imply or require additional monitoring over that required when the original SIPs were submitted in 1972.

A study is underway to develop the most cost-effective strategy for implementing a monitoring network; the monitoring implications of the five issues enumerated above have been incorporated in the study. It is expected that this analysis will have two results. First, new monitoring requirements may be promulgated to ensure that all SIP goals are met. Second, guidelines for the establishment and implementation of these networks will be developed and distributed to the appropriate agencies.

Revised regulations, if any, should be promulgated during 1974. The probable changes in monitoring are difficult to predict since several of the issues (prevention of significant deterioration of air quality, for example) have not been resolved.

Status of New Monitoring Methods

Several candidate methods are now being evaluated in order that the reference method for NO_2 can be replaced. A new method will be promulgated as soon as possible. The NO_2 air quality standard has not been affected by the change.

On October 12, 1973, EPA published in the Federal Register a notice of proposed rule making for determining

equivalence of ambient air monitoring methods. When finalized, the proposal will establish requirements and procedures applicable to determinations as to whether methods for sampling and analyzing the ambient air may be designated "equivalent" to the established "reference methods."

In the area of source measurements, a number of test procedures were promulgated along with the New Source Performance Standards and the National Emission Standards for Hazardous Air Pollutants.

Quality Control

An EPA-wide quality control strategy was adopted in early 1973. The purpose of the program is to ensure that all data collected by EPA, contractors, or State and local agencies are valid. By using standardized procedures and following rigorous quality control practices, it will also be possible to better compare data collected by various agencies and make decisions regarding achievement of standards, trends, and adequacy of control plans, with a greater degree of confidence than has been the case to date.

TRENDS IN NATIONAL AMBIENT AIR QUALITY LEVELS

Long-Term Trends in TSP, and SO_2 Levels

NASN data collected for the past 12 years have been examined for trends in ambient levels of TSP and SO_2.[4] The analysis shows that both TSP and SO_2 concentrations at most center-city NASN sites have declined significantly over the 12-year period. In general, stations with the highest concentrations in the early 1960's have shown the greatest improvement. The average center-city TSP concentration has decreased by approximately 20 percent, while SO_2 concentrations have shown a much greater improvement, decreasing by approximately 50 percent. Figures 2 and 3 graphically illustrate this decline. These results are preliminary and will be further refined as State air quality information is included.

These improvements in air quality have primarily resulted from the increased use of cleaner-burning fuels in the residential, commercial, and industrial sectors of most urban areas. Local and State air pollution regulations limiting the use of coal and high-sulfur fuels have resulted in increased use of low-sulfur

---

4 U.S. Environmental Protection Agency, National Air Quality Levels And Trends In Total Suspended Particulates And Sulfur Dioxide Determined By Data In The National Air Surveillance Network, Office of Air Quality Planning and Standards, Research Triangle Park, N.C. April, 1973.

FIGURE 2

COMPOSITE LEVELS OF TOTAL SUSPENDED PARTICULATES AT URBAN AND NONURBAN NASN STATIONS

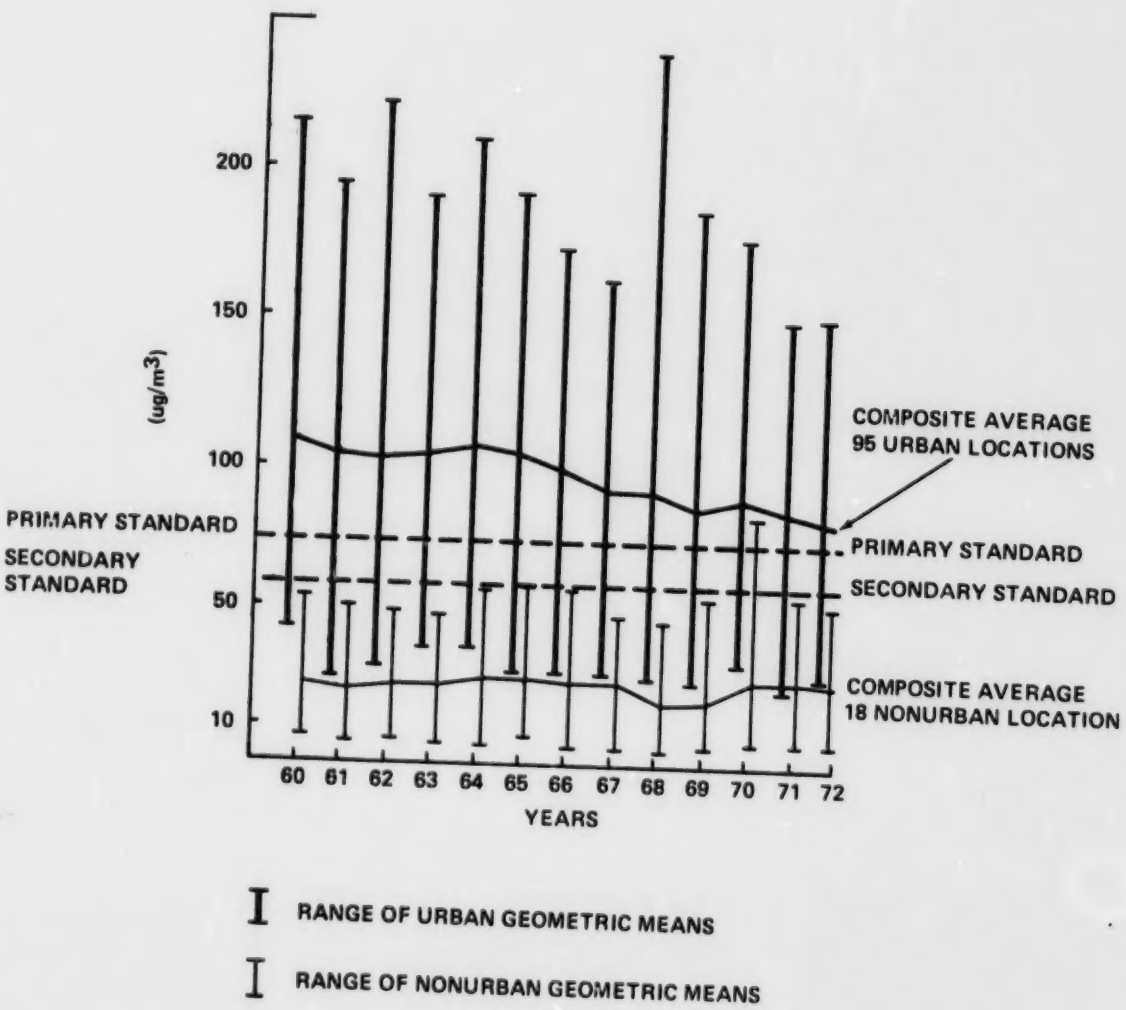
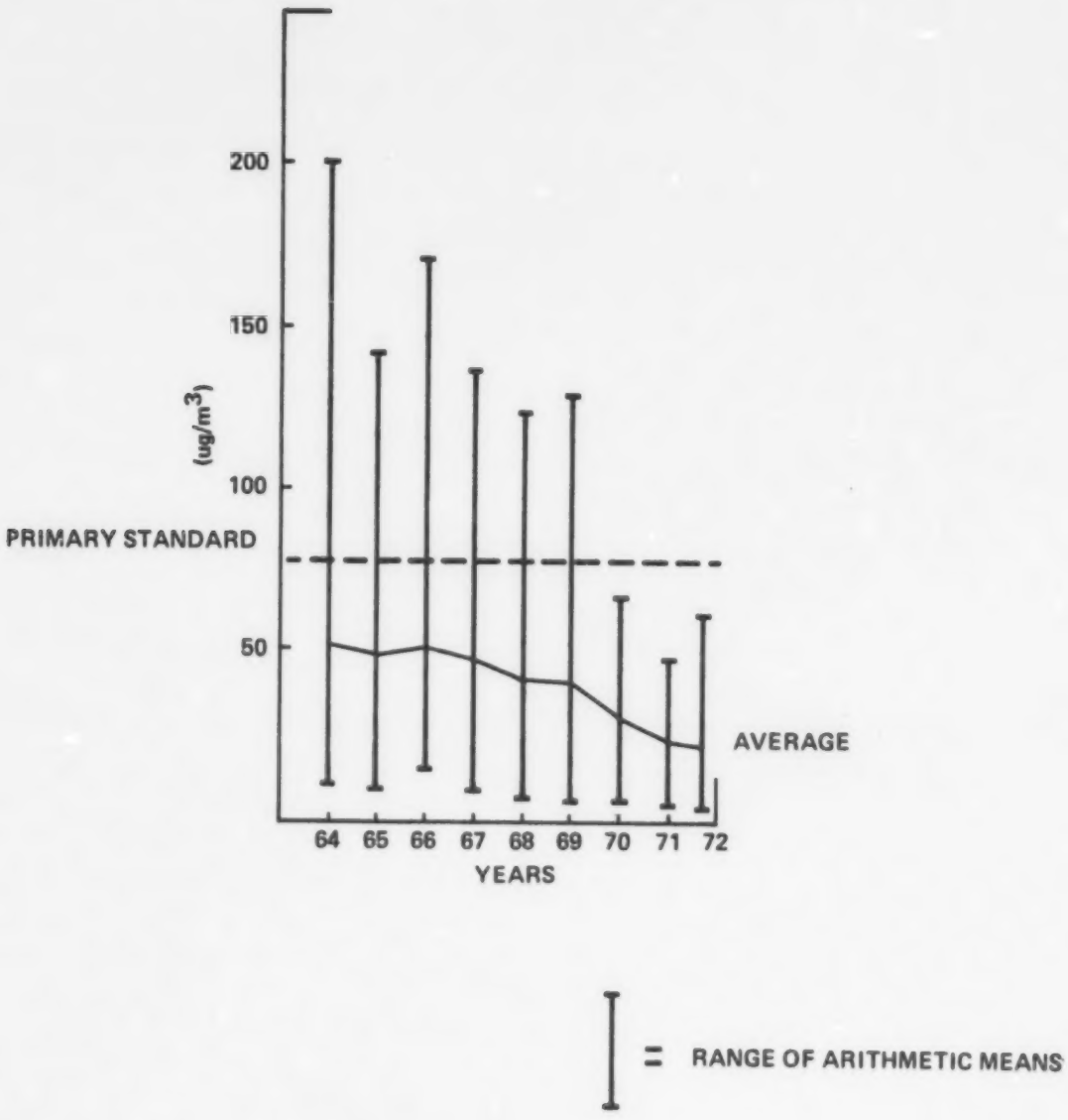


FIGURE 3

COMPOSITE LEVELS OF SULFUR DIOXIDE AT 32 NASN STATIONS



oil and natural gas as the primary sources of energy.

Nationwide long-term trends in atmospheric levels of oxidants, CO, and NO_2 are not yet identifiable.

Air Quality in AQCRs

In spite of the improvement in air quality at selected locations, air quality levels in many AQCRs still do not satisfy the requirements of the primary ambient air quality standards. In fact, as additional air quality data have been collected, EPA has found that some AQCRs originally assumed to be meeting standards may actually be violating them. The data are still under review. However, if this preliminary finding holds true, then these AQCRs will have to adopt control strategies that will result in ambient air quality standards being met. In those States where the example region concept was used in SIP development, i.e., application of a plan designed for the AQCR with the worst air quality in all AQCRs, no new plan may be necessary. It is expected that existing regulations, and any new ones that will be required, will result in attainment of primary ambient air quality standards in almost all AQCRs by 1975.

Tables 13 through 16 present the status of AQCRs with respect to TSP, SO_2, oxidants, and CO levels. As explained in Chapter V, AQCRs were classified according to estimated air quality when measurements were not available. This fact, in combination with changes in actual air quality over time explains why, for each of the criteria pollutants, some priority I AQCRs are not in violation of the primary standards while some Priority II or III AQCRs are in violation.

Table 13

STATUS OF AIR QUALITY, TOTAL SUSPENDED PARTICULATES a/

1972

Priority Classification b/	Number of AQCRs	AQCRs Reporting One Quarter's Data From One Station	AQCRs Reporting Complete Annual Average	AQCRs Violating Either Primary Standard c/
I or IA	120	118	110	102
II	70	63	53	22
III	57	37	28	14
TOTAL	247	218	191	138

a/ As of Oct. 1973

b/ Federal Register, Vol. 36, #158, p. 15488, Aug. 14, 1971

c/ There is both an annual and a 24-hour primary standard

Table 14

STATUS OF AIR QUALITY, SULFUR DIOXIDE a/

1972

Priority b/ Classification	Number of AQCRs	AQCRs Reporting		AQCRs Violating Either Primary Standard c/
		One Quarter's Data From One Station	Complete Annual Average	
I or Ia	60	52	41	13
II	41	31	27	4
III	146	79	55	2
TOTAL	247	162	123	19

a/ As of Oct. 1973

b/ Federal Register, Vol. 36, #158, p. 15488, Aug. 14, 1971

c/ There is both an annual and a 24-hour primary standard

Table 15

STATUS OF AIR QUALITY, OXIDANTS a/

1972

Priority b/ Classification	Number of AQCRs	AQCRs Reporting One Quarter's Data From One Station	AQCRs Violating the Primary Standard
I	55	31	25
III	192	7	3
TOTAL	247	38	28

a/ As of Oct. 1973

b/ Federal Register, Vol. 36, #158, p. 15488, Aug. 14, 1971

Table 16

STATUS OF AIR QUALITY, CARBON MONOXIDE a/

1972

Priority b/ Classification	Number of AQCRs	AQCRs Reporting One Quarter's Data From One Station	AQCRs Violating the Primary Standard
I	30	22	21
III	217	26	21
TOTAL	247	48	42

a/ As of Oct. 1973

b/ Federal Register, Vol. 36, #158, p. 15488, Aug. 14, 1971

VII. THE DEVELOPMENT OF NEW AND IMPROVED AIR POLLUTION CONTROL TECHNIQUES

The development and demonstration of stationary source air pollution control technology is one of EPA's largest tasks. Approximately $27.2 million were spent on this activity in FY 73, primarily for on-going programs to demonstrate control methods for sulfur and nitrogen oxides, particulates, and other pollutants such as mercury, beryllium and asbestos. The purposes of these activities are threefold:

- To describe at least one method of control for each major source of pollution.
- To provide a technical base for EPA enforcement activities.
- To establish technical and economic data to support New Source Performance Standards (NSPS).

Achieving these goals hinges on development and demonstration of flue gas cleaning systems, production of clean fuels, and modification of industrial processes.

Stationary Source Air Pollution Control Technology-Sulfur Oxides

The emphasis of the SO_x control program has been on demonstrating four methods of flue gas cleaning which are applicable to new and existing coal-and oil-fired utility and industrial combustion sources. The four control systems are:

- o A wet lime/limestone scrubber at the TVA Shawnee Steam Plant, Paducah, Ky.
- o A magnesium-oxide scrubber at Boston Edison's oil-fired Mystic Station, Everett, Mass.
- o A catalytic-oxidation scrubber at Illinois Power System's Wood River Station, Ill.
- o A sodium-ion scrubber (Wellman-Power Gas), at Northern Indiana Public Service Co., Gary, Ind.

On the basis of this and other work EPA has concluded that demonstratable control technology for utility SO_x emissions exists.

A second technique used to reduce the emissions of SO_x is to actually remove sulfur from the fuel prior to combustion. EPA is supporting research in this field, particularly in coal-cleaning methods and fuel oil desulfurization. Feasibility studies have been completed for several fuel-cleaning processes, and large scale demonstrations are being planned.

A third technique in the SO_x control strategy is combustion process modification, that is the modification or control of the actual combustion process to reduce not only the production of SO_x but also NO_x and particulates. Several processes are under consideration including fluidized-bed combustion and submerged combustion.

These technologies are primarily for the control of emissions from combustion sources. Industrial sources

such as iron foundries, coking plants, nonferrous smelters, and petroleum refineries are also major sources of SO_x emissions; control technology for these sources is under development and will be the focus of EPA efforts in the future.

Particulates

The control technology for large particulates is well developed. EPA efforts have been directed primarily toward obtaining operating and economic data to evaluate electrostatic precipitators, filter systems, and scrubbers.

Of great concern is the control of fine particulate, that fraction of the particulate emission smaller than 3 micrometers. These small particles remain suspended in the atmosphere and are easily respirable and absorbable into the body. Fine particulates may contain toxic trace metals and sulfates, each of which has considerable impact on health. Control technology for fine particulates is seriously deficient. Current EPA efforts center on developing adequate devices and on field testing as well as development of control methods. EPA is working both to improve available collection devices and to identify and ultimately demonstrate novel devices.

Nitrogen Oxides

Combustion modification is the only demonstrated method for control of NO_x emissions from fossil fuel burning. Tests of flue gas treatment techniques have

shown little promise to date. Presently, the application of combustion technology will allow NO_x emissions from gas-and oil-fired utility boilers to be controlled to the NSPS that have been set for these fuel categories.

EPA programs for combustion modification to control NO_x include:

- o Air/fuel mixture control (low excess air combustion)
- o Staged combustion
- o Recirculation of flue gas
- o Boiler component design

Other Pollutants

National Emissions Standards for Hazardous Air Pollutants (NESHAPs) have been set for mercury, asbestos, and beryllium. Other materials which are considered pollutants but for which standards have not been set include trace metals, polycyclic organic matter (POM) and miscellaneous hydrocarbons, fluorides, odors, etc. In general, control technology research efforts are necessary for these materials.

One current goal of the Air Technology Program is to characterize the major sources and the specific chemical and physical properties of trace metal emissions. This is a necessary first phase in the development of control systems.

Several tasks are being funded for field testing coal-fired utility and industrial boilers, and for limited source characterization of gas- and oil-fired units. A field testing program is also planned for residential and commercial heating units.

In addition, control technology development is planned for certain chemical processing sources. These include the zinc compounds industry, a significant source of metallic particulates, and the glass industry, which emits large quantities of arsenic, fluorides, and fine particulates.

Efforts are underway to establish control techniques both for open sources and for selected closed sources of asbestos. The key sources include mining, milling, and manufacturing sites; the latter source tends to be located predominately in urban areas and contributes substantially to human exposure to asbestos. The objective of the efforts is to develop and demonstrate control technology for handling, unloading, and disposal operations, in addition to demonstrating the operation of a specific methodology for controlling closed sources of asbestos in manufacturing operations. This work is undertaken to supplement control via NESHAPS, since their effectiveness is still unknown.

In control of mercury, an effort is being undertaken to remove mercury from waste gases containing SO_x (such as those gases derived from combustion and nonferrous metallurgical sources) via a combined SO_x and mercury control system. Because both of these substances come from combustion sources, it would be highly useful to have a single system that could effectively control both.

Current methods of POM detection and analysis are generally complex, costly, and time-consuming. Also, it is unknown to what extent POM may actually be emitted as a gas which condenses to a particulate substance, rather than emitted as a particulate. There is, in addition, a problem in obtaining quantitative data on POM emissions, whether in particulate or gaseous form. In situ methods for measuring POM and determining its characteristics are required, as well as techniques for upgrading combustion processes to avoid POM formation. The air program will focus attention on these problems.

EPA has begun to develop control systems through the pilot plant stage of development for the following sources--acrylonitrile plants, refinery crackers, asphalt roofing plants, and ethylene dichloride plants.

VIII. THE DEVELOPMENT OF INSTRUMENTATION TO MONITOR EMISSIONS AND AIR QUALITY

Methods for the quantitative detection of pollutants in air are essential to EPA's abatement and control program. Initially, methods are needed to determine the extent and causes of a pollution problem and in investigations of the health and welfare effects of the pollutants. When standards are promulgated, reference or compliance methods must also be promulgated, for determining achievement and maintenance of the standards. Furthermore, implementation plans call for determining ambient air quality levels and stationary and mobile source emission levels. For these applications, the methods and associated devices employed must be low cost, reliable, and capable of unattended operation or use by relatively untrained personnel.

In the area of air quality measurements technology, the major problems relate to the reduction in cost to allow more economical deployment in monitoring networks and to improve sensitivity for use in background locations. For source emissions, the major problem is that of the proper interfacing of instruments with the source so as to allow representative samples to reach the instrument. There is also the time-consuming and expensive problem of evaluation on all relevant sources, since interfering substances and conditions vary from source to source. Source emissions measurements technology is still in a developmental stage.

EMISSIONS MONITORING DEVELOPMENTS

Mobile Sources

Under the Clean Air Act, standards have been established for emissions from automobiles. Specifically, measurements must be made to show that CO, NO_x, and HC meet the standards established for the emissions from engines. As of the end of fiscal 1973, the methods for NO_x, and HC have been shown to be adequate, although the procedures for applying these methods have not been completely worked out. In the case of CO, there is still a question concerning the adequacy of sensitivity of present instrumentation for the very low emitting post-1976 vehicles. Work is continuing on improvement of this instrumentation.

Fiscal 1973 also saw the completion of other developments related to mobile sources. The development of an instrument for methane, CO, and CO_2 was completed. This instrument will be of value in investigating advanced design automotive engines. A prototype instrument for measuring odors from diesel engines and a device for the measurement of over 100 hydrocarbons were completed. The hydrocarbon device will allow EPA to determine which hydrocarbons are active in smog formation and thus require control.

Stationary Sources

In the area of stationary source measurements, validation of compliance methods for the first group of New Source Performance Standards was completed. Performance specifications for monitoring systems for SO_2, NO_x, CO, HC, and visual opacity were established and will be promulgated in the near future. Evaluation of commercially available instruments for hydrogen sulfide and total sulfur revealed several shortcomings and the need for further research and development. Finally, the designs were completed for interfacing measurement devices with sources. Evaluation of these designs are underway to determine whether modifications are needed.

AMBIENT MONITORING DEVELOPMENTS

An X-ray fluorescence instrument for determination of elements in particulate matter was developed. Once a representative sample is obtained, this instrument will determine a large number of elements in a short period of time, i.e., phosphorous, sulfur, copper, lead, and other heavy metals.

A study of the mechanism of particulate formation has resulted in a "working concept" that assumes two basic categories of particulate matter, i.e., fine and coarse. A candidate method has been selected for use

in evaluating this concept and instruments are now being constructed for testing this idea.

An additional improvement in the measurement technology for particulate emissions from stationary sources has been development of a particle size classifier and a device for continuously monitoring particulate emissions (beta gauge). These devices are currently being field tested.

QUALITY CONTROL EFFORTS

The quality control effort required to provide valid data is now well underway. In fiscal 1973, guidelines for developing quality assurance programs were completed and a first seminar for quality control program managers was conducted. Reference samples or calibration procedures were established and are available for SO_2, CO, NO_2, ozone and particulate matter. Commercial sources are being identified as suppliers of the reference materials and calibration devices. In addition, EPA proposed guidelines for establishing the equivalency of other methods to an EPA promulgated reference method for ambient air measurements.

IX. STANDARDS SET OR UNDER CONSIDERATION PURSUANT TO TITLE II OF THIS ACT

A number of emission standards have been set, and many regulations have been issued to support EPA's control program in the mobile source area. Table 17 lists the major emission standards and Table 18 briefly summarizes the major regulations acted upon during 1973 in the mobile source area.

Table 18

MOBILE SOURCE REGULATIONS ACTED UPON BY EPA IN 1973 a/

Reduction of Lead in Fuels (Proposed)

All Grades of leaded gasoline will be limited to:

2 grams of lead per gallon by 1975
1.7 grams of lead per gallon by 1976
1.5 grams of lead per gallon by 1977
1.25 grams of lead per gallon by 1978

Availability of Lead-Free Fuel (Final)

Large gasoline retailers (over 200,000 gallons per year) will be required to offer lead-free gasoline after July 1, 1974; lead-free gasoline is needed by catalyst-equipped cars.

Nozzle restrictions will make it impossible to mistakenly use leaded fuel in a car requiring lead-free gasoline.

Motor Vehicle Certification Inspections (Proposed)

EPA is authorized access to:

Facilities where processes related to certification are carried on.

Production lines of foreign and domestic manufacturers to ensure essential similarities of production and test vehicles.

a/ First 10 months only

Table 17

Mobile Source Emission Standards
Acted Upon by EPA in 1973[a]

Emission Source	Effective Date	Percentage Emission Reduction[g]		
		Hydro-carbons	Carbon Monoxide	Nitrogen Oxides
Light-duty vehicles (except California)	1975[e]	83	83	11
California	1975[e]	90	90	43
Light-duty vehicles (all States)	1976[e]	95	96	43
Light-duty trucks	1975[e]	77	77	11
Turboprop and turbofan or turbojet (< 8,000-lb. thrust)	1/1/79	80	60	20
Jets newly manufactured of >8,000-lb. thrust[f]	1/1/79	70	60	50
Retrofit of pre-1979 jets >29,000-lb. thrust	1/1/83	70	60	50
Turbine engines certified after 1980[f] (> 8,000-lb. thrust)	1/1/81	85	72	50
Piston engines (except radial engines[b])	12/31/79	30	50	--[c]
Auxiliary power units[d]	1/1/79	--[c]	30	50

a First 10 months only
b These are no longer being produced in significant quantities
c Maintenance at existing levels required
d Units used to operate on-board power systems when propulsion engines are not operating
e Model year
f Excluding supersonic transports
g Compared to uncontrolled levels

Servicing of Auto Emission Controls (Final)

Warning systems (such as dashboard lights or buzzers) on 1975 and later model cars are required to alert drivers to malfunctions or to the need for maintenance if the vehicle's emission control systems are expected to require maintenance during the vehicle's useful life, defined as 50,000 miles.

Low-Emission Vehicle Standards (Proposed)

Advanced technology or production techniques are expected to be needed for a vehicle to quality as a "low-emission vehicle."

Regulations on High-Altitude Vehicles (Proposed)

New cars sold in substantial numbers in high-altitude areas will be required to pass special high-altitude certification tests.

New car owner manuals will be required to contain information on engine adjustments necessary for proper functioning of emission control systems at high and low altitudes.

X. THE STATUS OF STATE, INTERSTATE, AND LOCAL POLLUTION CONTROL PROGRAMS ESTABLISHED PURSUANT TO AND ASSISTED BY THIS ACT

A single agency is designated to administer Air Quality Control Programs in each of the 50 States, the District of Columbia, Guam, Puerto Rico, the Virgin Islands, and American Samoa. In addition, approximately 265 local agencies, concerned with air pollution control at the municipal level, work in coordination with the 55 State agencies. The State agencies are organized as follows:

- 29 environmental agencies combining air, water and possibly other environmental protection programs, and in some cases exercising significant natural resources management.
- 20 health agencies combining air pollution control functions (and possibly other environmental protection programs) with traditional medical health protection functions.
- 6 air agencies specializing predominately in the control of air pollution.

FEDERAL FINANCIAL ASSISTANCE TO AIR POLLUTION CONTROL AGENCIES

EPA provides financial assistance to 54 State agencies (the single exception being American Samoa) and 17[illegible] local agencies. These 230 agencies represented approximately 95% of the total expenditures by all State and local air pollution control agencies in FY 1973. This assistance takes the form of grants for planning, developing, establishing, improving or maintaining programs for the prevention and control of air pollution, supplemented by special contractual assistance for the conduct of specific Federally-required planning activities. Grants awarded in Fiscal Years 1972 and 1973, are summarized in Table 19.

PROGRESS OF STATE AND LOCAL AIR POLLUTION CONTROL PROGRAMS

Total expenditures for the support of air pollution control programs have grown at an average annual rate of approximately 30 percent, from $13 million in Fiscal Year 1965 to an estimated $113 million in Fiscal Year 1973. The percentage of these expenditures provided by Federal financial assistance has increased from approximately 31 percent in Fiscal Year 1965 to approximately 44 percent in Fiscal Year 1973. However, the portion of these expendi-

Table 19

Summary of Grant Awards To State and Local Air Pollution Control Agencies

State or Territory	FY 1972 Actual	FY 1973[a]
Alabama	$ 527,324	$ 714,400
Alaska	69,775	139,600
Arizona	207,049	377,000
Arkansas	208,527	201,800
California	3,690,260	3,761,300
Colorado	796,270	817,300
Connecticut	1,335,796	1,355,800
Delaware	180[b]	193,300
District of Columbia	225,000	334,100
Florida	957,742	1,045,600
Georgia	630,218	626,500
Hawaii	96,445	175,400
Idaho	81,687	108,200
Illinois	2,423,520	2,987,800
Indiana	826,034	778,900
Iowa	559,243	645,300
Kansas	335,761	596,300
Kentucky	187,981	656,600
Louisiana	175,000	350,000
Maine	---[b]	192,000
Maryland	987,000	1,365,800
Massachusetts	794,385	1,312,900
Michigan	1,613,520	1,999,700
Minnesota	366,641	661,200
Mississippi	459,499	419,500
Missouri	717,574	1,145,900
Montana	184,681	266,600
Nebraska	231,929	247,100
Nevada	245,702	247,100
New Hampshire	185,409	185,400

Table 19 (continued)

State or Territory	FY 1972 Actual	FY 1973[a]
New Jersey	$2,135,581	$2,262,700
New Mexico	706,440	482,500
New York	3,967,790	4,273,000
North Carolina	1,489,039	1,188,600
North Dakota	40,525	45,000
Ohio	1,841,153	2,414,900
Oklahoma	484,906	416,000
Oregon	486,828	553,700
Pennsylvania	2,080,700	2,545,500
Rhode Island	133,899	133,900
South Carolina	111,783	430,300
South Dakota	32,025	32,000
Tennessee	703,614	927,200
Texas	2,603,299	2,923,300
Utah	---[b]	160,000
Vermont	224,426	154,400
Virginia	1,062,000	991,800
Washington	1,129,910	1,084,500
West Virginia	317,620	507,000
Wisconsin	965,448	840,400
Wyoming	64,439	68,100
American Samoa	---	---
Guam	54,744	54,800
Puerto Rico	464,417	419,300
Virgin Islands	100,043	100,000
Total Grants	$40,320,781	$46,827,300
Other Federal Financial Assistance[c]	1,808,000	3,636,800
	$42,080,000	50,463,100

[a] The amounts shown for FY 1973 grant awards are preliminary.

[b] Actual funding also included carry-over from the previous fiscal years.

[c] Other Federal financial assistance includes special contract support for the continuing development and revision of SIPs and the equivalent value of temporary Federal employees assigned to control agencies as a supplement to their program grants.

tures provided by State and local revenue sources has grown almost seven-fold during the same period, from $9 million in Fiscal Year 1965 to an estimated $63 million in Fiscal Year 1973.

The increase in the number of employees of State and local control agencies is an indicator of the Nation's growing capability to control air pollution. Table 20 shows that the number of on-board personnel has more than doubled in the last 4 years.

Table 20

Personnel Employed by State and Local Air Pollution Control Agencies

Agency Level	Fiscal Year 1969	1971	1973
State	997	1,537	2,929
Local	1,840	2,628	3,266
Total	2,837	4,165	6,195

Original manpower estimates contained in the SIPs indicated that a manpower level by FY 75 of about 8,500 would be necessary to accomplish clean air objectives. The trend indicated in Table 20 is encouraging; it is hoped that the original manpower estimates will be met. However, it should be noted that since this estimate was made additional requirements have been put on the States because of additional actions required on transportation controls implementation, prevention of significant degradation of air quality, and indirect sources/maintenance of standards.

Accomplishments of the State programs have been reflected throughout this report in the sense of their activities in developing, implementing, and enforcing SIPs.

XI. REPORTS AND RECOMMENDATIONS MADE BY THE PRESIDENT'S AIR QUALITY ADVISORY BOARD

The President's Air Quality Advisory Board met in St. Louis, Mo., on March 27-30, 1973, to explore urban air pollution problems and to consider the tradeoffs involved in achieving environmental goals. The Board received comprehensive briefings from Federal and State officials, representatives of industry and environmental groups, and other knowledgeable and concerned individuals. In addition, the Board conducted an on-site review of various aspects of urban air problems during a tour of St. Louis' industrial and central city areas.

Individual conclusions and recommendations were formulated by members of the Board and submitted to the Administrator as part of the Board's report on its meeting.

APPENDIX

Summary of EPA's Stationary Source Air Enforcement Actions May 1972 - October 1973

SUMMARY OF EPA AIR ENFORCEMENT ACTIONS

MAY 1972 - OCTOBER 1973

COMPANY TYPE OF SOURCE	LOCATION	POLLUTION PROBLEM	TYPE OF ACTION	RESULTS OR STATUS
Allied Chemical Corporation Sulfuric Acid Plant	Claymont, Delaware Region III	Secure compliance with Delaware SIP limiting SO_2 concentrations and mass emission rates.	Notice of violation issued on May 24, 1973. Order to comply issued on July 20, 1972.	Bimonthly progress reports have been submitted as of October 10, 1972. Information submitted to EPA on construction of an emission control facility to comply with the plan. A construction schedule with increments of progress has been established by EPA.
Delmarva Power & Light Company Steam Generator	Delaware City, Delaware Region III	Secure compliance with Delaware SIP requiring the use of fuel containing not in excess of 3.5% sulfur.	Notice of violation issued on March 6, 1972. Order to comply issued on April 17, 1972.	At the conclusion of litigation instituted by Getty Oil Company for a court order restraining enforcement of the fuel sulfur content regulation the order to comply was upheld. (The interest of Getty Oil Co. in this matter arises from a contractural arrangement between Delmarva Power & Light Co. and Getty Oil Co. under which Getty provides Delmarva petroleum coke for fuel in exchange for electricity.) Getty Oil Co. (Eastern Operations) vs. Ruckelshaus (342 F. Supp. 1006; 467 F. 2d. 349; cert. den., _____ U.S. _____, Jan. 15, 1973). Source is in compliance.
City of Woonsocket Open Burning	Woonsocket, Rhode Island Region I	Open burning at municipal refuse disposal facility in violation of Rhode Island regulations.	Notice of violation issued on Feb. 7, 1973. Order issued July 7, 1973.	On March 7, 1973, a conference was held with representatives of the city, who agrees to cease all open burning of debris except that generated by HUD. Region I is presently attempting informally to assist HUD in the resolution of its disposal problems.
City of Newport Open Burning	Newport, Rhode Island	Secure compliance with Rhode Island SIP prohibiting open burning at public refuse disposal sites and prohibiting the emission of harmful contaminants.	Notice of violation issued Oct. 13, 1972. Order to comply issued on Jan. 11, 1973.	The Newport refuse disposal site is under surveillance, and pursuant to Section 113, judicial proceedings are authorized if further violations of the SIP occur. Presently in compliance.

COMPANY TYPE OF SOURCE	LOCATION	POLLUTION PROBLEM	TYPE OF ACTION	RESULTS OR STATUS
City of Middletown Open Burning	Middletown, Rhode Island Region I	Secure compliance with Rhode Island SIP prohibiting open burning at public refuse disposal sites and prohibiting the emission of harmful contaminants.	Notice of violation issued Oct. 13, 1972. Conference held between EPA and Middletown officials Nov. 6, 1972.	In compliance presently, but order will be issued if future violations occur.
Texaco, Inc.	Massachusetts Region I	Selling fuel with higher sulfur content than permitted under Mass. regulations.	Notice of violation issued Feb. 1, 1973.	On Feb. 12, 1973, pursuant to a Section 114 letter, Texaco met with Region I personnel and provided information with respect to fuel availability and demand. Since this meeting Texaco has ceased its violation.
American Barrel Company Drum Reclamation Furnace & Incinerator	Massachusetts Region I	Operation of drum reclamation furnace violating Mass. regulations regarding open burning, visible emissions and general air pollution.	Notice of violation issued Mar. 15, 1973, administrative order issued Sept. 18, 1973.	
Northeast Utilities Service Steam Generator	Massachusetts Region I	Burning fuel with a higher sulfur content than permitted under State regulations.	Notice of violation issued Mar. 16, 1973.	In compliance.
U.S. Steel Corp. Gary Works and Universal Atlas Cement, Buffington Harbor Plant Steel Mill, Cement Plt.	Gary, Ind. Region V	Operation of a steel mill with cement production facilities in violation of Indiana's regulations regarding visible emissions, combustion for industrial heating and process operations.	Notice of violation issued April 18, 1973. Order issued June 22, 1973.	On May 16, 1973, a conference was held with the representative of U.S. Steel, the City of Gary and the State of Indiana. An order was issued on June 22, 1973. U.S Steel requested U.S. District Court, Hammond, Ind., for a stay of the order and declaratory judgments to void order. EPA counterclaimed to enforce the terms of the order (first increment past) on August 15, 1973. U.S. District denied U.S. Steel's motion to stay and will hold hearing on the merits of declaratory judgment.

COMPANY TYPE OF SOURCE	LOCATION	POLLUTION PROBLEM	TYPE OF ACTION	RESULTS OR STATUS
Wabash Smelting Corp. Secondary aluminum plant	Indiana Region V	Violation of Indiana regulations for visible emissions and process operations.	Notice of violation issued Mar. 28, 1973. Order issued May 30, 1973.	Presently in compliance with terms of the order.
H.N. Hartwell & Son, Inc.	Massachusetts Region I	Selling fuel with a higher sulfur content than permitted under Mass. regulations.	Notice of violation issued March 16, 1973.	Presently in compliance.
Union Petroleum Corp.	Massachusetts Region I	Selling fuel with a higher sulfur content then permitted under Mass. regulations.	Notice of violation issued March 16, 1973.	Presently in compliance.
Central Electric Power Cooperative	Jefferson City, Missouri Region VII	Power company refused to submit information requested in Section 114 letter.	Administrative order issued May 2, 1973.	All the information required in the administrative order has been provided.
Hercules, Inc. - Missouri Chemical Works	Louisiana Missouri Region VII	Operation of plant in violation of Missouri regulations regarding process operations.	Notice of violation issued May 16, 1973. Order Issued Oct. 15, 1973.	
Amax Lead Co. Primary Lead Smelter	Boss, Missouri Region VII	Violation of Missouri SO_2 regulations.	Notice of violation.	Request for concurrence pending submission of further information from Region. Request withdrawn, source in compliance as of June 20, 1973.
Asarco Primary Lead Smelter	Glover, Missouri Region VII	Violation of Missouri SO_2 regulations.	Notice of violation issued July 2, 1973. Administrative order issued.	

COMPANY TYPE OF SOURCE	LOCATION	POLLUTION PROBLEM	TYPE OF ACTION	RESULTS OR STATUS
St. Joe Minerals Corp. Primary Lead Smelter	Herculaneum Missouri Region VII	Violation of Missouri SO_2 regulations	Notice of violation issued June 2, 1973.	Conference and order pending.
Centropolis Crusher, Inc.	Kansas City, Mo. Region VII	Refused to submit information required in Section 114 letter.	Order issued on June 6 1973.	All information required in the order has been provided.
City of Lawrence Open Burning	Lawrence, Mass. Region I	Open Burning	Notice of violation issued June 6, 1973.	Conference held.
So. Calif. Edison Mohave Power Plnt.	Nevada Region IX	Violation of State visible emission regulation and SO_2 emission limits.	Notice of violation issued July 25, 1973; order issued.	Conference held August 14, 1973.
City of Bristol Open Burning	Bristol, R.I. Region I	Open burning at municipal refuse disposal facility in violation of R.I. regulations.	Notice of violation issued April 26, 1973.	Conference held. Issuance of order is pending.
Kaibab Ind. Wood waste burners	Payson, Ariz. Region IX	Violation of Arizona visible emission regulations.	Notice of violation issued July 24, 1973. Administrative order issued Sept. 26 1973.	
Western Pine Ind. Wood waste burners	Snowflake, Ariz. Region IX	Violation of Arizona visible emission regulation.	Notice of violation issued July 24, 1973.	

COMPANY TYPE OF SOURCE	LOCATION	POLLUTION PROBLEM	TYPE OF ACTION	RESULTS OR STATUS
Western Moulding Co., Inc. Wood waste burners	Snowflake, Ariz. Region IX	Violation of Arizona visible emission regulation.	Notice of violation issued July 24, 1973.	Order pending.
Wilfret Brothers Realty Trust Incinerator	Arlington, Mass. Region I	Violation of Mass. regulations on incinerators.	Notice of violation issued July 2, 1973.	
Penn Central Trans. Company Passenger and freight terminals	Massachusetts Region I	Transfer of cement products creating visible emission problem and trucks idling contrary to requirements of Mass. SIP.	Notice of violation issued July 2, 1973.	
Independent Stave Co., Inc. Boilers, cyclones, Tepee Burner, Incinerator	Lebanon, Missouri Region VII	Violation of Missouri particulate matter regulation.	Notice of violation issued July 9, 1973. Supplemental notice of violation issued Oct. 10, 1973. Order on first notice issued Oct. 16, 1973.	
Bethlehem Steel Corp. Steel Mill	Burns Harbor Plant Chesterfield, Ind. Region V	Violation of Indiana visible emission and particulate emissions (process wt.) regulations.	Notice of violation issued July 11, 1973.	No order issued since 3 sources presently in compliance and coke ovens on satisfactory State order.
Kaiser Steel Corp.	Fontana, Calif. Region IX	Violation of Calif. visible emission and SO_2 regulations (H_2S standard).	Notice of violation issued Aug. 7, 1973.	Conference held August 29, 1973; order pending.

COMPANY TYPE OF SOURCE	LOCATION	POLLUTION PROBLEM	TYPE OF ACTION	RESULTS OR STATUS
6 wood waste burners	Mendocino and Northern Sonoma County, Calif. Region IX	Violation of Calif. visible emission regulations.	Notice of violation issued Aug. 15, 1973.	Order pending.
Seaboard Foundry, Inc. Gray Iron Foundry	Johnston, R.I. Region I	Violation of R.I. visible emissions and particulate emissions (process wt.) regulations.	Notice of violation issued Aug. 1, 1973.	Order pending.
Inland Steel Co. Integrated Steel Mill	East Chicago, Ind. Region V	Violation of Ind. visible emissions, combustion for industrial heating and process operations.	Notice of violation issued July 18, 1973.	Order pending.
Youngstown Sheet and Tube Co. Integrated Steel Mill	East Chicago, Ind. Region V	Violation of Ind. visible emissions, combustion for industrial heating and process operations.	Notice of violation issued July 18, 1973.	Order pending.
Missouri Power & Light Co. Power Plant	Jefferson City, Mo. Region VII	Refused to submit information required in Section 114 letter.	Administrative order issued Aug. 1, 1973.	

COMPANY TYPE OF SOURCE	LOCATION	POLLUTION PROBLEM	TYPE OF ACTION	RESULTS OR STATUS
Roberts Const. Co. Limestone Quarrying and Crushing	Sundance, Wyoming Region VIII	Violation of ambient air standard for total suspended particulates as provided in Wyoming SIP	Notice of violation issued Aug. 16, 1973. Order issued Sept. 28, 1973.	
J. Edward Moran Generating Station City of Burlington Electric Light Dept. Boilers	Burlington, Vt. Region I	Violation of Vt. particulate matter and visible emissions regulations.	Notice of violation issued on Aug. 14, 1973	Conference and order pending.
Atlantic-Richfield Corp. Power Plts & Steel Mills	East Chicago, Ind. Region V	Violation of Ind. SO_2 regulation (APC-13)	Notice of violation issued Sept. 10, 1973.	Region withdrew further consideration pending more information from company.
Mobil Oil Corp. Oil refinery	East Chicago, Ind. Region V	Violation of Ind. SO_2 (APC-13) and visible emission (APC-3) regulations.	Notice of violation issued Sept. 10, 1973.	
American Oil Co. Oil Refinery	Whiting, Ind. Region V	Violation of Ind. SO_2 (APC-13) and visible emission (APC-3) regulations.	Notice of violation issued Sept. 10, 1973.	
Borden, Inc. Phosphate Plant	Palmetto, Fla. Headquarters	Refused to submit information required in Section 113 letter. (NSPS development)	Administrative order issued Aug. 17, 1973.	

COMPANY TYPE OF SOURCE	LOCATION	POLLUTION PROBLEM	TYPE OF ACTION	RESULTS OR STATUS
New Eng. Power Co.; Brayton Point Power Stations	Somerset, Mass. Region I	Violation of Mass. General Regulation to Prevent Air Pollution and Visible Emission Regulations.	Notice of violation issued Sept. 6, 1973.	
Alpha Portland Cement Co. Clinker Cooler	Afften, Mo. Region VII	Violation Mo. particulate matter (process wt.) regulation.	Notice of violation issued Sept. 28, 1973.	
U.S. Gypsum Co. Mill rock process Shingle finish process packing process	East Chicago, Ind. Region V	Violation of Ind. particulate matter (process emission APC-5) and visible emission (APC-3) regs.	Notice of violation issued Oct 5, 1973.	
Bullard Castings, Inc. Cupula furnaces	Bridgeport Conn. Region I	Violation of Conn. particulate matter process emissions, visible emissions and fugitive dust regs	Notice of violation issued Oct. 12, 1973.	
U.S. Gypsum Co. Mineral wool process cupolas, blow chambers, curing oven, asphalt frame control	Wabash, Ind. Region V	Violation of Ind. particulate matter (process emission, APC-5) regs.	Notice of violation issued on Oct. 5, 1973	
C.F. Industries Ammonium Nitrate pulling process.	Terre Haute, Ind. Region V	Violation of Ind. Particulate matter (process emissions, APC-5) regs.	Notice of violation issued Oct. 9, 1973.	

COMPANY TYPE OF SOURCE	LOCATION	POLLUTION PROBLEM	TYPE OF ACTION	RESULTS OR STATUS
Universal Atlas Cement	Hernibal, Mo. Region VII	Refused to submit §114 information requested.	Administrative order issued Oct. 1, 1973.	
Cites of Lamont, Dayton, Connell, Oakesdale and Whitman County, Washington	Same Region X	Violation of Washington open burning regulation.	Notice of violation issued Sept. 21, 1973.	
HIPSCO Bailly State Power Plant Boilers	Gary Vicinity Ind. Region V	Violation of Ind. SO_x reg. (APC-13)	Notice of violation issued Sept. 13, 1973.	Conference held on Oct. 18, 1973.
West Penn Power Co. Mitchell State	Courtney (Wash. Co.) Pa. Region III	Violation of Pa. SO_x reg.	Notice of violation issued Sept. 13, 1973.	Conference held on October 18, 1973.
Public Serv. Co. of Ind. Wabash River Sta.	Terre Haute, Ind. Region V	Violation of Ind. SO_x reg. (APC-13)	Notice of violation issued Sept. 13, 1973.	Conference held on October 18, 1973.
Can-Tex Ind., Inc. Clay Shale Grinding Storage	Cannellon, Ind.	Violation of Ind. particulate matter (process emission, APC-5) regs.	Notice of violation issued Oct. 17, 1973.	
Pacific Co., Washington dump Peninsula disposal service	Long Beach, Pacific Co., Wash. Region X	Violation of Washington's open burning regulations	Notice of violation issued Oct. 17, 1973.	

U.STYPE OF SOURCE	LOCATION	POLLUTION PROBLEMS	TYPE OF ACTION	RESULTS OR STATUS
U.S. Gypsum Gypsum manu. Gypsum plaster & panel manu.	Shoals, Ind. Region V	Violation of Ind. particulate matter (process emission, APC-5) regulations.	Notice of violation issued Oct. 5, 1973.	
Container Corp. of America boilers	Wabash, Ind. Region V	Violation of Ind. particulate matter from combustion of fuel for indirect heating (APC-4R) and SO_2 regs. (APC-13).	Notice of violation issued Oct. 9, 1973.	
Keeffer Paper Mill boilers	Brounstom, Ind. Region V	Violation of Ind. particulate matter from combustion of fuel for indirect heating (APC-4R).	Notice of violation issued Oct. 12, 1973.	
Central Soya, Co. Boilers	Indianapolis, Ind. Region V	Violation of Ind. particulate matter from combustion of fuel for indirect heating (APC-4R).	Notice of violation issued Oct. 12, 1973.	
Ind. Univ. Physical Plant Power Plant	Bloomington, Ind. Region V	Violation of Ind. particulate matter form combustion of fuel for indirect heating reg. (APC-4R)	Notice of violation issued Oct. 24, 1973.	

*U.S. GOVERNMENT PRINTING OFFICE:1974 546-314/210 1-3